GOVERNMENT OF THE ORANGE RIVER COLONY.

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REPORT

OF THE

INDUSTRIAL COMMISSION,

1904.

Bloemfontein:
ARGUS P. & P. Co., Ltd., GOVERNMENT PRINTERS. S.D. 1071. A3567.

ERRATA.

Report, P. 8, foot.
For "Evidence of Mr. Pirnitzer, p. 98,"
Read "Evidence of Mr. Pirnitzer, question 8."

P. 13.
For "Dr. Targett Adams' Analysis, Appendix V., p. 36."
Read "Appendix V., p. 35"

P. 16, foot.
For "Appendix VI., p. 49," read "Appendix VI., p. 47."

P. 17, foot.
For "Appendix IX., p. 60," read "Appendix IX., p. 59."

P. 21.
For "(see Letter of Mr. Wallis on this subject) Appendix X., p. 76,"
Read "Appendix X., p. 73."

P 22, last line.
For "Appendix XVI., p. 93," read "Appendix XVI., p. 88."

P. 23, foot.
For "Reports of Professor Hahn, p 91, Mr. Preece, p. 89,"
Read "Reports of Professor Hahn, p. 88, Mr. Preece, p. 86."

P. 25, foot.
For "Appendix XVII., p. ," read "Appendix XVII., p. 91."

P. 27.
For "Letter from Traffic Manager, Appendix XXII., p. 102,"
Read "Appendix XXII., p. 99."

P. 28, top.
For "The various drugs given in Mr. Hewitt's list should also be tried, Appendix XX., p. 101," read "Appendix XX., p. 98."
For "Letter from Mr. Dunstan, Appendix XXIII., p. 107,"
Read "Appendix XXIII., p. 104."
For "See Messrs. Shaw's Letter, Appendix XXIV., p. 108,"
Read "Appendix XXIV., p. 104."

P. 29.
For "A Report of the Superintendent of Stationery on these Inks will be found in Appendix XXV., p. 120," read "Appendix XXV., p. 117."

PASSIM.
For "Mr. Wyndnam R. Dunstan," read "Professor Wyndham R. Dunstan."

P 33.
For "After hearing his evidence, p. 125," read "p. 122,"
For "From the letter from the Superintendent of the Tokai Reformatory, Appendix XXVI., p. 134,"
Read "Appendix XXVI., p. 131."

P. 34.
For "Mr. Gunn's Report, Appendix XXVIII., p. 137,"
Read "Appendix XXVIII., p. 134."

EVIDENCE, DOCUMENTS.

P. 73.
For "Appendix XI.," read "Appendix X."

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COMMISSION.

GOVERNMENT OFFICES,

BLOEMFONTEIN, O.R.C.

To Johannes Henricus Meiring, Hubert James McLaughlin, Bertie Harold Olivier Armstrong, Moritz Leviseur and Henry Frederick Gill.

GREETING.

WHEREAS it is deemed desirable to appoint a Commission to enquire into and report upon the possibility of promoting by Government aid the growth of new minor industries, the raw products for which are available in the Orange River Colony, and assisting the development of similar undertakings already in existence therein.

NOW THEREFORE I, HENRY FRANCIS WILSON, Companion of the Most Distinguished Order of Saint Michael and Saint George, Acting Lieutenant-Governor of the Orange River Colony, do hereby appoint you, the said Johannes Henricus Meiring, Hubert James McLaughlin, Bertie Harold Olivier Armstrong, Moritz Leviseur and Henry Frederick Gill to be Commissioners to consider and report upon the best methods of promoting the establishment of the several industries mentioned in the Schedule hereto, or such other industries as you may deem to be advantageous to the Colony, and for that purpose to take evidence from persons qualified to give the same, and also to visit and report upon any similar undertakings already in existence in the Colony, with a view to their development, and generally to advise the Government to what extent (if any) pecuniary assistance may properly be given from public funds to promote the objects intended by the appointment of this Commission, whether by grants in aid, subsidies, bonuses on output or otherwise.

AND I do hereby direct that you Johannes Henricus Meiring shall be the Chairman of the said Commission.

AND I do further appoint Walter Samuel Cohen and George Bailey Beak joint Secretaries of the said Commission.

AND I do further direct that for the purpose of visiting and reporting upon any undertakings already in existence in the Colony, one Commissioner shall be sufficient, and that for taking evidence in connection with the enquiry, two Commissioners and a Secretary shall form a quorum, but that the report of the said Commission shall be considered and signed by you all.

GIVEN under my hand and seal at Bloemfontein in the Orange River Colony this 10th day of February, 1904.

H. F. WILSON,
Acting Lieutenant-Governor.

SCHEDULE.

Spinning and weaving wool.
Hosiery and clothes-making.
Blanket-making.
Carpet-making.
Leather tanning and dressing.
Boot-making.
Harness-making.
Basket-making.
The cultivation of silk worms and the manufacture of silk.
Straw hat-making.
Lace-making.
Jam-making (including Sweets, Pickles, and Preserved Fruits).
The manufacture of tobacco and cigars.
Bee-keeping.
Biscuit-making.
The manufacture of maizena, oatmeal, corn-flour and starch.
The manufacture of chicory.
Coffee roasting and grinding.
The manufacture of Indigo.
Pottery and tile-making (including roofing and flooring tiles).
The manufacture of cement.
Rope-making.
Furniture-making.
The manufacture of table salt.

REPORT.

MAY IT PLEASE YOUR EXCELLENCY

WE, YOUR COMMISSIONERS, appointed to enquire into the possibility of fostering by Government aid the development of existing industries and introducing new ones, the raw material for which is available or might be produced in the Orange River Colony, have the honour to submit herewith our Report.

SECTION 1.

Further enquiry necessary.

We have used our best efforts to obtain evidence from practical men engaged in the various industries which formed the subject of our enquiry, and have neglected no available source of information in this and the other South African Colonies. We feel, however, that we are still only at the threshold of the enquiry, and while we hope that ample justification will be found in this Report for the modest beginnings we recommend, we recognize what a wide field still remains to be explored. Investigations must be set on foot in many directions both in the Orange River Colony itself and elsewhere, experiments must be made and tested by time before any real advance can be expected in the Industrial development of this Colony.

SECTION 2.

Farming the main industry of the O.R.C., but the future of the country demands the development of other industries.

We have here a scattered population almost solely engaged in stock raising and agriculture, importing all the manufactured goods they require and exporting the raw material they produce for manufacture elsewhere. Circumstances have hitherto been favourable to this one sided national life, and the need for a greater variety of occupation has not made itself felt. The natural increase of population, after the subdivision of land had reached its limit, would in any case have eventually made it necessary to multiply the sources of employment—the new situation created by the War has merely made this necessity more immediate and obvious.

While, therefore, farming is and must remain the staple industry of the Colony, and the chief concern of its Government, an attempt to develop the natural resources of the Country and the latent capacities of its inhabitants in other directions than that of farming, is to proceed along the natural lines of progress, and is called for by the circumstances of the times. In such a development too, in the increased prosperity and larger demand for his produce which must result, lies the best hope for the farmer himself. In the words of a recent writer "Agriculture calls manufactures into existence, and manufactures support agriculture; both are inseparable, and the combination, the integration of both, brings about the grandest results."*

Growth of industries in other Countries.

The same writer shows how, as technical knowledge becomes diffused, industries of all kinds are decentralized and scattered over the Globe, and gives many striking statistics of the recent rapid growth of manufactures in hitherto purely agricultural countries, such as Russia, Austria Hungary, Italy, India and Brazil to reinforce his conclusion that "the present tendency of humanity is to have the greatest possible variety of industries gathered together in each country, side by side with agriculture." †

Whether this conclusion be accepted or not, the fact remains that even those nations, which were the most devoid of industrial traditions or mechanical skill, have devloped their industries to a remarkable extent during the last 50 years, and have successfully entered into competition, at least in their own markets, with more advanced States, with manufactures of long standing, and highly organized industrial systems.

SECTION 3.

Methods by which they have achieved success.

Such results are encouraging to us, and the methods by which they have been achieved are full of interest and guidance in the efforts we hope to see made here towards the same end. Success has not been due to chance, but to deliberate policy worked out by the combined action of the people and the State. Protection to young industries by tariff has been the rule among European nations, as well as our

Protection.

* Fields, Factories and Workshops. P. Kropotkin, P. 4.
† Id.

own Colonies and America, and when the time is ripe it will rightly be demanded here. But the most enlightened States have not stopped short at Protection, indispensable as that is admitted to be in the early stages of development. They have used more positive and direct means for the promotion of industries, a short account of which we think it worth while to give.

Technical Education.

First and foremost we find great systems of Technical Education, beginning with the Primary Schools, proceeding through the whole series of Secondary, Intermediate and Higher Education, and including the direct teaching of handicrafts, as well as technical education in the wider sense. As this matter is forming the subject of a special enquiry it is only necessary for us to express our conviction that here, as elsewhere, education will prove by far the most powerful influence we can bring to bear towards progress in the desired direction.

Investigation.

In a Country with untried resources, investigation and experiment must precede any new departures in the industrial field, yet there is little inducement to private enterprise to undertake such work, which however ultimately profitable to the Community, only too often entails loss on the investigator and first experimentor. We accordingly find the State undertaking it, either directly through its own Officers, or by offering bounties or other rewards sufficient to indemnify private persons for the risk incurred.

Organization.

Organization, in the widest sense of the word, is another direction in which most useful work can be done. The correspondence of this Commission during its brief existence has been enough to shew us what might be done by a permanent Agency, whose business it was to "act as the Intelligence Department for Industrial enterprise" in this Colony, and generally facilitate matters for those thinking of investing capital in such undertakings. We have had numerous letters from manufacturers both in South Africa and in Europe asking information and assistance on various points, which in at least two cases we have been able to give, with results which we believe will be equally satisfactory to the manufacturer and the Colony.

SECTION 4.

The Wurtemburg system.

To illustrate these statements as to the methods which have been successful in Europe, we may fitly conclude this part of the subject by a few extracts describing them in some detail. We choose for this purpose the State of Wurtemburg.

"Before 1851 Wurtemburg was purely agricultural, and impoverished by over population, the only handicraft was the making of wooden clocks and toys by wood cutters of the Black Forest."*

In 1886 the British Minister at Stuttgart reported as follows :—

Industrial progress of Wurtemburg.

"England now buys from Wurtemburg, blankets, carpets, flannels, hosiery, linens, tissues, instruments, types, drugs, chemicals, paper, ivory goods, wood-carving, toys, furniture, hats, pianos, gunpowder, clocks, and stays. The manufacture of gunpowder, once pre-eminently English, is now a speciality of Wurtemburg, and the Rottenweil Mills have attained such celebrity that they supply powder for Artillery and blasting to Bavaria, Russia, Holland, Servia and England. A manufacture of small arms has also obtained a footing, the Mauser factory being now famous all over the world for its repeating riffles."†

"It is to be noted especially that these industries are carried on by an Agricultural population, who forty years ago were as devoid of mechanical knowledge as that of Ireland, and who, in taking to these Industries, have not abandoned agriculture; but on the contrary have found their agriculture prosper through the growth of a Manufacturing population in their towns and villages."

The Board of Industries.

"How was this industrial revolution brought about? In 1851, Dr. von Steinbeis, President of the Board of Trade in Wurtemburg, struck with the handicraft of the various nations, especially with that carried on by rural communities, as indicated by the exhibits at the London Exhibition of that year, re-

* Second report of the Royal Commission on Technical Instruction. Vol. V. App. J.J.

† Quoted in Recess Committee's Report on a Board of Agriculture and Industries for Ireland. P. 58.

solved to try whether the people of Wurtemburg could not be taught to use their hands and brains to similar purpose. The King seconded his idea, and sent him on a mission of investigation through Europe. On his return there was founded in Stuttgart, in connection with the Ministry of Commerce, a Board of Industries under his presidency to which was entrusted the task of introducing and developing crafts and industries, and devising and carrying out a system of technical instruction. This Board, or, as it is called, Central Stelle, is assisted by a Consultative Council composed of teachers in the various institutions, and representative Merchants and Manufacturers elected by the Chamber of Commerce."

"Nothing is more striking than the skill with which this department of Government has managed to hit off the line between the dangers of paternalism on the one hand, and those of laissez-faire on the other. The Central Stelle takes care, while encouraging private enterprise, never to supersede it. It gives advice; it advances money for the establishment of industries; it introduces schools for the teaching of trades; it sometimes starts industries itself, but always on lines which eventually lead to the absorption of these Industries by private enterprise in the form of companies or associations. It keeps in close touch with the trade organizations of the country, with the merchants, and manufacturers, and with the Municipalities and local authorities; and in the schools which it establishes it throws the responsibility of management upon local committees, and requires that the localities shall contribute to their support in proportion to the Government grants. A guiding principle of its action is that more is to be gained by practical assistance in the development of industry than by theoretical instruction. In teaching a handicraft it has always been careful to promote an industry in the locality and to find it a market. It has managed to introduce industries into given localities by sending skilled workmen abroad to acquire a

knowledge of new methods in trade and agriculture, who, on their return, go about to towns and villages giving instruction, and by introducing foreign workmen and instructors." *

With this account may be compared the evidence given by Mr. Pirnitzer, Austro-Hungarian Trade Commissioner with regard to the system of State aid to industries in force in Hungary. (Evidence of Mr. Pirnitzer P. 121).

O.R.C. must work out its own system.

We do not of course suggest that the Wurtemburg system or any other system should be adopted wholesale in the Orange River Colony. Our conditions are in many respects peculiar, and we must gradually work out our own salvation. But in attempting to frame a policy, we cannot ignore the experience of others whose success is an incentive if nothing more.

Section 5.

Major and minor industries.

The terms of reference of this Commission directed us to report as to the possibility of promoting minor industries. As the enquiry progressed it became clear that it would not be desirable to limit ourselves to these, and we have accordingly made recommendations with regard to wool, leather, cement and other industries, which, as they require considerable capital and technical knowledge, cannot be classed as Minor. Under the head of Minor Industries we place such Industries as do not require expensive plant and can be carried on by a population wholly or partly engaged in agriculture, more particularly those Industries known as Home or Cottage Industries, which are of special value to farming communities. We shall deal with this subject in detail in a later part of this Report, for while we believe that an attempt ought to be made to introduce some of the innumerable Home Industries, which flourish elsewhere, we do not disguise from ourselves that there are a great many obstacles to overcome in a Country as thinly populated and as conservative as this. There is not only the difficulty of teaching the handicraft, though that is difficult enough, but there are also commercial difficulties, which would seem to impose on Government the necessity of finding a market for the products of any Home Industry they succeeded in introducing, as Mr. Pirnitzer tells us is done in Hungary. (Evidence of Mr. Pirnitzer P. 98).

Difficulties in establishing minor industries here.

* Recess Committee's Report. P.P. 59-60.

With the larger industries the case is different. Private enterprise will be ready to develop them with private capital. All that a Manufacturer can expect from Government—and it will be sufficient—is some financial assistance during the earlier years, to take the place of that protection by tariff by which young industries in other countries have been nursed into prosperity, together with relief from any special burdens, such as excessive railway rates, which handicap his industry.

Larger industries will be undertaken by private enterprise with Government assistance.

Such assistance, limited in duration as in amount, we have had no hesitation in recommending at once for every industry in which the prospects seem sufficiently good to make it likely that Manufacturers will come forward. Such are the Woollen, Leather, and Preserving Industries, and the manufacture of Cement.

There remain a number of industries, such as the manufacture of beet sugar, tobacco, and pottery, which seem to us promising, but for which some preliminary work is necessary before capital will be attracted to them. For beet sugar we must shew that sufficient beet of the required sugar standard can be grown here. In the case of tobacco we must improve the quality of the leaf as well as increase the quantity, and pottery will have to be treated experimentally before it can be manufactured commercially.

Industries for which preliminary work is necessary.

We shall recommend that this preliminary work be done by Government, in the belief that the successful results we anticipate will lead to such a development of these industries by private enterprise as will amply compensate Government for the expenditure incurred, even allowing for some failures.

Section 6.

Before going further it will be as well to indicate the Agency which we recommend for carrying out the part we have assigned to Government in the development of new industries. We see no necessity at present for a special Government Department for dealing with these matters, and the experience of other Countries shews that they are most successfully managed by a more representative body, in which business men, farmers, and other persons chiefly interested, find a place as well as Officials.

Agency for administering State Aid.

An Industrial Board for the O.R.C. recommended.

We would therefore suggest that the existing Commission should be transformed into a Board, to whom would be entrusted the work of investigation and organization which we have outlined, and the administration of all funds voted for the purposes recommended in this Report, or for purposes which might hereafter be approved.

We feel sure from our own experience that the Board could count on the cordial co-operation of the Agricultural Department whose assistance will be required for carrying out many of our recommendations, and to whom, when the Industrial Board has fulfilled its object, the work might ultimately be handed over.

A member of the Board should visit Europe.

We have already expressed our belief that sucn a Body might do a great deal of valuable and lasting work, but in order that they should be in the best position to discharge their functions we would recommend that a member of the Board should visit the United Kingdom and the principal European Countries in order to collect information at first hand, and to complete and verify the investigations which have been begun by this Commission. Much would be learned in this way which could never be learned in South Africa, and not less important would be the opportunities of meeting British Manufacturers and interesting them in the Industrial development of the Orange River Colony. The facts contained in this Report, instead of remaining hidden in the pages of a Blue Book, could thus be made accessible to the persons the best qualified to make use of them, and illustrated and explained as they would be in personal interviews, might, we believe, induce a flow of British capital and technical knowledge towards industrial enterprise here.

We may now conclude this brief survey of the question as it presents itself to us in its wider aspects, and pass to a detailed examination of the various industries on which we have taken evidence, and to the conclusions we have formed with regard to each.

———

Section 7.

WOOL.

Wool our most important product.

The export of Wool from the Orange River Colony reached in the year before the War the large total

of 19,636,838 lbs. value £363,776. Wool is therefore by far our most important product, and it is only natural to find that the question of manufacturing it in the Colony was seriously considered by the late Government. The attempts made cost a good deal of money and led to no result; proposals for any further expenditure may therefore be regarded with not unreasonable suspicion, which however we think should be somewhat dispelled by the information we have obtained.

Our enquiries have been directed to the development of the industries connected with Wool, both on the Factory System and as a Home Industry. The latter can be more conveniently considered under the general heading of Home Industries, as to which we shall make recommendations later. With the former, which belongs to the sphere of private enterprise we shall now deal.

Woollen Manufacture requires large capital.

Woollen manufacture under modern conditions requires a large capital. The machinery must be of the most approved type, and in order to manufacture economically production must be on a considerable scale. Unless these conditions are fulfilled it is unlikely that a Factory established here, however much protected, could compete with the imported article. This is brought out very clearly in the evidence of Mr. Reyburn, late Manager of the Newcastle Wool Factory (P. 2) and in the two reports made by him to his Board (App. 1 P. 7). The failure of this Factory is chiefly attributed to excessive cost of production, due to antiquated machinery, and the remedy suggested is to increase the output by the introduction of new machinery, which would double the production while only increasing the cost of production by one third.

The Newcastle Factory

Report of the Harrismith Chamber of Commerce.

As to whether a market would be found for this increased production Mr. Reyburn has made no definite statement, though he clearly expresses his opinion that, given machinery of the latest pattern, good management and good designs, the Newcastle Factory ought to have been a success. In this connection we would draw Your Excellency's attention to the report of the Harrismith Chamber of Commerce (App. II. P. 12) urging Government support being given towards the establishment of a Woollen Factory there.

The Committee appointed by the Chamber to investigate the question put themselves into communication with those connected with the Newcastle Factory, whose reports did not give them much encouragement. Notwithstanding this the Committee are "strongly inclined to recommend the establishment of a Woollen Factory in this District; their principal reason for making such a recommendation is that locally made tweeds find a good market, and although such an undertaking may not have been successful elsewhere, i.e., in Natal, they are of opinion that with judicious management there is no reason why it should not be made a success here. If therefore the Government would be agreeable to subsidise the undertaking they feel justified in making a strong recommendation in the matter.

Export of wool from Harrismith Station.

During the period from June, 1902, to June, 1903, 1,851 tons of Wool and Mohair were dispatched from this station.

Labour.

With regard to labour, it is possible, with a large permanent garrison stationed here, that sufficient labour would be available among the families of married soldiers."

With these conclusions we are inclined to agree, and we certainly think no more suitable centre could be found in the Colony than Harrismith.

Blanket Factory at Harrismith.

Accordingly, having been approached on the subject of a blanket factory by Mr. Edward E. James, of Messrs. James James & Co., Durban, and Edward E. James & Co., London, our Chairman visited Harrismith with a representative of the Firm. The Town Council have offered a suitable site on favourable terms, and Messrs. James are prepared to erect a Factory at a cost of £50,000 for the manufacture of blankets, etc., on being assured of Government support.

Bonus recommended.

The manufacture of blankets—a simpler process requiring less expensive plant, than that of cloth—seems to have good prospects of success, and we recommend that a bonus should be offered on the following conditions :—

(1) Not less than 20,000 blankets and 20,000 yards of cloth, or equivalent in either (one blanket being taken to equal one yard cloth) to be produced annually in order to earn a bonus.

(2) The bonus to be £500 per annum for the production of the above quantities and at the rate of 3d. per yard for cloth and 6d. each for blankets for any quantities in excess of the above.

(3) The bonus to be offered for three years.

Section 8.

LEATHER.

Samples from Middlemore Tannery.

Your Commissioners were much struck by the excellent samples of leather and completely finished skins shewn them by Mr. Arthur Roberts, Manager of the Middlemore Tannery, King William's Town, who gave the commission very valuable information, entirely favourable to the prospects of the Leather Industries in the Orange River Colony. His opinion, and it is the opinion of a thoroughly practical and successful Tanner, is that Leather could be manufactured as well here as in England, and at a cost certainly not higher. (Evidence of Mr. Arthur Roberts Q.50).

Opinion of Mr. Arthur Roberts.

Opinion of Mr. Woodhead

On the other hand we have the opinion of Mr. Woodhead, of Woodhead Bros., Woodstock (see Report of his interview with Mr. B. H. O. Armstrong. Appendix III. P. 34) that rough leathers for the manufacture of Veldt Schoen and harness would be the more profitable to tan here.

An unfavourable opinion was also expressed by Mr. L. Richardson, of the firm of Edward J. Richardson, Newcastle on Tyne. (Appendix IV. P. 35).

The Elands-boontje and other tanning material.

Mr. Reisig and other local authorities speak highly of the value of the Elands-boontje—a root which grows freely on the Veldt—as a Tanning material. It is said to be equal to Oak bark, and to be obtainable in practically unlimited quantities.

Dr. Targett Adams' Analysis (Appendix V. P. 36) shews 15 per cent. of Tannin in the root of the Elands-boontje as compared to 35 per cent. in the Black Wattle bark (Evidence of Mr. Arthur Roberts Q.13).

Thorn bark can also be used, but according to Mr. Roberts it is inferior from every point of view to Black Wattle (Q. 13).

It is possible that the Black Wattle would grow in certain parts of the Orange River Colony, and in any case the bark would be obtainable from Cape Colony and Natal.

Prospects of tanning in the O.R.C. promising.

Your Commissioners are of opinion that Tanning is essentially a Factory Industry, the processes being highly technical, and that a Tannery on a small scale could be started in the Orange River Colony with a good prospect of success (see letter from Messrs. Bagshaw Gibaud & Co. (Appendix V. P. 36).

Recommendations.

We therefore beg to submit the following recommendations :—

Bonus.

(1) That Government should offer a bonus to any approved Manufacturer establishing a Tannery in the Orange River Colony, and producing in the year a total of not less than 5,000 dressed skins and hides, which quantity must include not less than 1,500 large hides. Such Bonus to be offered for five years and to be at the rate of 5s. per hide, and 1s. per skin so produced as above.

Municipalities should co-operate.

(2) That the Municipality of the town where the Factory is established should be invited to co-operate under suitable conditions, by offering a free site for a factory and facilities with regard to water.

Assistance to industries employing leather as a raw material.

In addition to a Bonus for the production of Leather it will eventually be desirable to offer a Bonus for those Industries for which Leather is a raw material, viz., the manufacture of Veldtschoen, harness and boots. We do not think it necessary to make recommendations as to these at present.

Section 9.

JAM; CANNED, EVAPORATED AND STERILIZED FRUIT; CHUTNEYS; PICKLES, AND SWEETS.

Importance of developing these industries.

These Industries can conveniently be considered together, and Your Commissioners believe that in the interests of the Farming population there are none which more urgently require developing. In the season the price of fruit and vegetables is so low that it is

not worth while to bring them in from farms at any distance from a market. During the rest of the year the Colony lives on Jams and tinned fruits imported from Cape Colony, from England, and from Australia, to the value of £32,367 in 1903. The quantity of fruit grown in the Orange River Colony could be largely increased, the quality leaves nothing to be desired for the purposes we have in view.

High cost of requisites for production.

The evidence sufficiently indicates the difficulties which would have to be faced by a manufacturer beginning business in the Orange River Colony. The heavy cost here of labour, sugar, tin, and packing materials, in fact of all the requisites for production, cexcpt the fruit, would be a serious handicap to a man attempting to capture the market from more favourably circumstanced competitors.

He must aim at producing goods of a high standard of quality which will fetch a high price, and Government and the local authorities must be prepared to assist him in the early days of the industry.

Cape Confectionery and Preserving Trades.

The Cape Confectionery and Preserving Trades have grown up with the aid of a 5s. per 100 lbs. rebate on sugar used in manufactures. This is now abolished, but the Industry has made such rapid strides that it can stand alone.

We believe that a similar Industry might be developed in the Orange River Colony, and is deserving of all the support which Government can give.

A reduction in the cost of sugar would more than anything else help the growth of the industries under consideration, and it is to be hoped that this may result from the further improvement of Natal Sugar and of the means of transporting it here. The possibility of producing our own sugar must also be taken into consideration, and will be discussed later.

Factories must be in central positions.

The evidence seems to show that central positions on the Railway are essential for a Factory, but that Farmers within three days waggon journey would be able to bring fruit in to it. It is needless to point out what a difference this would make to Farmers in outlying Districts, who would find a regular outlet at a

more or less constant price for their existing production, now almost unsaleable, and an opportunity of increasing it.

Recommendation.

We have therefore no hesitation in recommending :—

Bonus.

(1) That Government should offer a Bonus to any approved Manufacturer establishing a Factory for the production of Jam, Canned, Evaporated and Sterilized Fruit, Pickles, Chutney and Sweets, and selling in the year not less than 50,000 lbs. weight of all or any of these articles. The bonus to be offered for five years and to be a sum of £200 for a sale of 50,000 lbs. and at the rate of 1d. per lb. for any quantity sold in excess of 50,000 lbs. We would advise that under existing circumstances this Bonus be only offered to one manufacturer in each District.

Necessaries for use in Factory to be carried on C.S.A.R. at South African Produce rate.

(2) That plant and necessaries for use in any Factory of this nature should be carried over the Central South African Railways or lines controlled by them, at the rates ruling for South African Produce.

Goods should be stamped with a Government stamp.

(3) That the goods produced by the Factory should be inspected by Government, and, if passed, should be stamped with a Government stamp.

Importance of this provision.

This provision appears to us to be of great importance. The Industry can only make its way by the manufacture of first-class goods. To get a good name at the start, and keep it, will be half the battle. Nor would Government wish to give a bonus for the production of inferior articles.

Factory to be established at Parys.

We have already with Your Excellency's sanction concluded an arrangement on these conditions (App. VI. P. 49) with Mr. H. H. Beamish. who is about to erect a well-equipped Factory at Parys, where the Town Council have granted a suitable site free of all charges for ten years for manufacturing purposes.

Section 10.

CEMENT.

Importance of manufacturing cement in the O.R.C.

The immense difference between the price of cement here and the price in Europe (average price in Europe 6s. per cask, at the Coast 12s., in Bloemfontein, 30s.) a difference due to the freight, which adds 400 per cent. to the F.O.B. cost, seems to us to make it imperative to use every effort to promote the manufacture of cement in the Orange River Colony. If the natural conditions are suitable a large industry could be developed, with the whole of Central South Africa as its market, for no imported cement could compete with an equally good article manufactured locally. Cement at a reasonable price would also mean better as well as cheaper building, and would contribute materially to reduce the cost of living.

Evidence of Mr. Gotthard.

We were fortunate in obtaining the assistance of Mr. Gotthard, now of the Godwan River Lime Works, and formerly of the Pretoria Cement Factory, an expert of great experience both in South Africa and in Europe. His evidence (P. 58) gives a very clear idea of the conditions necessary for the successful manufacture of Cement, the capital for which he estimates at £50,000.

Government should test raw material.

It appears to us that the best help Government can give in the matter is, as suggested by Mr. Gotthard, to ascertain whether suitable raw material exists in sufficient quantities. We have already made a beginning by submitting to him for quantitative analysis samples of limestone obtained from various districts. If the analysis is satisfactory, it will be well to arrange for him to go over the ground.

Messrs. Kemperling's proposal.

We have been in communication with a Johannesburg Firm, Messrs. Alfred Kemperling & Co., who have the option on a farm near Holfontein Siding, where they propose to erect a Cement Factory, being satisfied that the raw material, which has been tested both in Johannesburg and Europe, is exceedingly suitable for the manufacture of high-class Portland Cement.

We would draw Your Excellency's attention to Messrs. Kemperling's letter (App. IX. P. 60) which points out the difficulties attending the industry in its early stages, and makes out in our opinion a good case for Government assistance.

Messrs. Kemperling propose to begin only in a small way with a production of 20,000 casks annually, for which a capital of from £20,000 to £25,000 is required, which we think may be more easily forthcoming if a Government subsidy is offered.

We therefore recommend :—

Bonus recommended.

(1) That any approved Factory producing annually not less than 20,000 casks of cement of 400 lbs. each, should be granted a bonus of £1,000 per annum.

(2) That the bonus should be granted for three years.

SECTION 11.

SILBESTOS.

Components of Silbestos.

Intimately connected with the manufacture of Cement is that of Silbestos, a new building material made out of asbestos and cement. Two forms of this material are at present manufactured by the Patentee, (1) Asbestos Slate consisting of 15 per cent. to 25 per cent. of Asbestos and 75 per cent. to 85 per cent. of cement, which is used for roofing, made in square slabs, and (2) Silbestos, which consists of a layer of Asbestos Slate and a layer of pure Asbestos millboard, which is used for walls, also in slabs.

This material is indestructible by fire, and is an excellent non-conductor of heat, cold, sound and humidity. It can be sawn, planed or drilled, and is very portable (Evidence of Mr. Silbiger P. 62).

A house of this material has recently been erected in Bloemfontein for the Customs Department, and has attracted much attention. In consists of four rooms 12ft. x 12ft. x 12ft. and a kitchen, and cost erected about £400. The walls consist of a framework of wood, to which are nailed externally and internally slabs of Silbestos half an inch thick. There is thus an air space all round the house, which ensures warmth in winter and coolness in Summer. The house was erected in about 14 days.

At present the cost of a house built of Silbestos is about 1s. per square foot less than one built of brick. But the manufacture of the material is car-

ried on under very unfavourable conditions. Asbestos is imported from Canada to Austria, is then manufactured into Silbestos and imported here.

Silbestos will displace galvanized iron.

The patentee, Mr. A. Silbiger, is anxious to manufacture Silbestos here, and claims that it will then take the place of corrugated iron for building purposes. It will be as cheap, as portable, and far superior as regards comfort, appearance and durability, and its manufacture here would keep in South Africa the large sums of money which now go out of the country for iron.

Of the raw material required for its manufacture we have asbestos in South Africa in unlimited quantities. The form of asbestos which is found here is the short fibre asbestos, which, though useless for the ordinary trade purposes, is the best for the manufacture of Silbestos.

Manufacture of Silbestos depends on that of cement.

The possibility of manufacturing Silbestos in the Orange River Colony depends however on the possibility of producing our own cement, as the cost of imported cement would be prohibitive. If this condition is fulfilled we are of opinion that the manufacture of Silbestos should receive every encouragement from Government, and we recommend that a bonus on the principle of 10 per cent. on the capital invested, which is estimated at £20,000 should be offered; the length of time for which the bonus should be given, and the minimum production which should be required, are points which need not be discussed at present.

Section 12.

TOBACCO.

The information on this subject is not as complete as we could have wished, and needs supplementing by evidence from persons actually employed in the manufacture of Tobacco and Cigars as a commercial undertaking on a considerable scale, which unfortunately we were unable to obtain.

Quantity of tobacco grown might be increased.

We have however heard enough to convince us that the production of Tobacco, even now a most profitable crop, could be largely increased in the Orange River Colony, and that there is room for very great improvement, both in the cultivation of the plant and in its subsequent treatment.

The evidence of Mr. Wallis (P. 71) late of the Cango Tobacco Co., and of Mr. Shaw Scott (P. 69) give interesting details of the methods of cultivation most approved elsewhere, compared to which those in use here seem primitive in the extreme.

Experiments needed to ascertain whether the O.R.C. can produce tobacco suitable for export.

Experiments are urgently needed to show what changes are advisable in our existing practice, and particularly experiments with different varieties of seed may be expected to yield important results. Until these experiments are made, the question cannot be decided whether we can produce a tobacco leaf which would be acceptable to European manufacturers, which appears to us to be the object at which we ought to aim; for the market in South Africa for manufactured tobacco is comparatively limited, while there are no limits to the quantity of tobacco leaf which might be exported to Europe, if once our leaf is able to obtain a footing there.

Curing.

After the plant is cut the next stages in the production of tobacco are the drying, which may be considered as part of the work of harvesting, and the curing or sweating, a process of fermentation which brings out the latent qualities of the tobacco and makes it fit for consumption.

Tobacco as manufactured in Europe and America is subjected to further manipulation, including softening, flavouring and blending, but South African tobacco, as ordinarily sold, is cured by the farmer, and goes straight from him to market, either in the rolled form or in the leaf, when it is generally cut by the retailer (Evidence of Mr. Botha Q 20).

Curing should not be done by farmer.

We are convinced that the best results will never be obtained, so long as the farmer undertakes the curing of the tobacco as well as the growing of it, i.e., is a manufacturer as well as a farmer, and this is true whether the tobacco is intended for sale in South Africa, or for Export and manufacture in Europe, for in the latter case also it must be cured before it is baled, as otherwise fermentation and decomposition would take place.

Now curing is a highly technical process, really a manufacturing process, on which the flavour and colour of the tobacco, in fact, its saleableness depend.

Expert curing and proper appliances necessary.

The farmer's methods of curing are rule of thumb, not scientific methods, and the results vary according to the care and capacity of the individual farmer. But with an article like tobacco, if a trade of any extent is to be developed, what you want more than anything else is uniformity, and this can only be secured by manufacturing with proper appliances and under skilled management.

The individual farmer cannot compete with them.

It is the recogniton of this fact which has led to the establishment of factories to deal with other farm products. Butter Factories, Wine Factories, Canning Factories are fast superseding the production of these commodities by the individual farmer, and if we are to do the best for the tobacco farmer of the Orange River Colony we must devise some means by which the manufacturing part of his business is done for him, and is done under the best conditions, which must be out of the reach of the individual farmer.

There are three ways in which this could be managed. The tobacco farmers of a District might combine and erect a Co-operative Curing Depot, or a manufacturer might be induced to start business, or finally, Government might undertake it. We fear that the time is not ripe for the Co-operative Factory, and that the solution will be found in one of the two latter alternatives.

English Manufacturers should be approached.

We think it might be possible to interest in the question some of the leading English Tobacco Firms trading with South Africa (See letter of Mr. Wallis on this subject, App. X. P. 76) and if a Commissioner is sent to Europe as suggested this should be one of the matters to which he should devote himself.

Recommendations.

The most immediate work to be done is however the experimental work we have outlined above, and we beg to submit the following recommendations :—

Experimental Station and Expert.

(1) That an experimental Tobacco Station should be established at Parys under a thoroughly qualified expert. Sufficient land and water should be available for experiments with different varieties of seed, and the expert, in addition to the work of the Station, should also travel round among the farmers and give information and advice.

Curing Depot

(2) That a small Curing Depot should be erected in connection with the Experimental Station to treat the tobacco grown there, and perhaps some selected tobacco from the neighbourhood. We regard this not as a commercial undertaking, but as an essential part of the experiment intended to set at rest the question whether we can produce a tobacco acceptable to the trade.

Bonus to manufacturer

(3) That a bonus should be offered for three years to any Manufacturer prepared to manufacture tobacco in the Orange River Colony on the following terms :—£300 annually for a minimum production of 60,000 lbs. and 2d. per lb. for any quantity in excess of the minimum.

Sheep Dip.

(4) A bonus for the manufacture of Nicotine Sheep Dip, of which there is such a large consumption in the Orange River Colony should also be considered.

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SECTION 13.

POTTERY.

We have devoted much attention to this subject, as to which it is specially difficult for anyone not an expert to form a judgment.

The first thing of course is to find the raw material, but the subsequent manipulation of the clay, the mixing or tempering, and all the various processes up to the firing, are of equal, perhaps greater, importance, so that it is only by practical experiment that any reliable conclusion can be arrived at.

Prospecting for Pottery Clay.

On the Town Commonage. Elstow.

We employed Mr. Preece, a Potter of experience, to prospect for Pottery Clay in the Bethlehem and Harrismith Districts, and he also reported on Clay deposits discovered on the Town Commonage of Bloemfontein, and at the farm Elstow (Reports of Mr. Preece App XIII., XIV., XV. P. 86 seq.)

An analysis and report on the Bloemfontein clay was also obtained from Professor Hahn, of Cape Town (App. XVI. P. 91).

There appears to be no doubt that suitable raw material exists in many parts of the Colony, and we think it not unreasonable to aim at manufacturing for ourselves and other parts of South Africa Roofing tiles, Flooring tiles, Pipes for sewerage and irrigation, and the rougher kinds of pottery.

Government assistance to test the raw material.

Government can do a great deal to develop these industries by obtaining samples of clay believed to be suitable and having it manufactured in order to test its commercial value. The provision of educational facilities to ensure a supply of trained potters should also have a good effect.

Small works in B'tein recommended.

In order to attain these objects we shall recommend the establishment in Bloemfontein of a small Pottery Works, which, besides manufacturing for sale, should also serve for testing clays and as a School where potters could be trained who would carry their trade to other parts of the Colony.

Elstow.

Mr. Preece's report on the Clay at Elstow and the burnt samples submitted from there are so satisfactory that we have felt justified in bringing the matter before local Capitalists, and we understand that a small Company is being formed to work this deposit.

Samples sent to Messrs. Doulton.

We have also sent home 800 lbs. of this Clay to the well-known works of Messrs. Doulton, with a request that they will be good enough to manufacture it into whatever articles it is best adapted for, and also furnish a Report.

Pipes for irrigation greatly needed.

If it is found possible to make rough earthenware pipes at a reasonable price, there will be a large sale among the farmers of the District for irrigation purposes. There is a great waste of water when led in open furrows as at present, and the price of iron pipes is prohibitve.

Clay on Town Commonage.

The clay on the Town Commonage of Bloemfontein, though inferior to that at Elstow both in quality and quantity, is favourably reported on (Reports of Professor Hahn P. 91; Mr. Preece P. 89) for making terra cotta as well as rougher pottery, and we have felt justified in obtaining a lease of the necessary ground from the Town Council, and in recommending Government assistance being given to some Italian Potters who wish to start a small works here.

Advance of £600 to Italian Potters.

Your Excellency has provisionally consented to an advance not exceeding £600 for the purchase of the necessary machinery, and for the fares from Italy of three Italian potters.

If, when the men and machinery arrive, they are suitable for the purposes we have in view, an agreement will be made with them to provide instruction. In this way, and also by instalments in cash, their debt can be liquidated.

If this arrangement does not appear desirable we shall recommend other measures to attain the same object. The Italians will still be liable for the advance, as security for which we shall hold the buildings they have erected and the machinery.

Pottery is an industry particularly suited to a farming population and likely to be attractive to ours. Italians from the country districts of Italy, accustomed to work on a small scale and to rely much on their own invention and taste, will perhaps be better teachers for the people than English Potters, who might expect to find the perfect machinery and subdivision of functions to which they are accustomed. For this Country we require men who can do all the operations connected with Pottery making from the mixing of the clay to the firing.

Recommendations.

Our recommendations on this subject may be summarized as follows :—

Bonus.

(1) A bonus to be offered to any Pottery or Tile Manufacturer on the usual basis of 10 per cent. on the capital invested, the minimum production required, and the other conditions to be fixed later.

Works in Bloemfontein

(2) The establishment in Bloemfontein of a small Pottery Works in which instruction can be given, either on the apprenticeship system, or as is found most desirable.

Section 14.

IRON.

We have not been in a position to investigate this subject, which was not included in our Reference, but it should receive immediate and careful attention from the Industrial Board. From information we have

received we believe that all the conditions are favourable for the development of an iron industry far surpassing in importance any industry we have considered in this Report. Not only have we the iron but we have coal and lime in close proximity, and every effort should be made to produce ourselves at least the £60,000 worth of raw iron which are at present imported into Natal, Cape Colony and the Orange River Colony.

Section 15.

BEET SUGAR, VEGETABLE OILS, FIBRES, THE MILLING INDUSTRIES.

Agricultural Industries which require introduction of new species of plants.

These are essentially agricultural industries, the development of which depends in the first place on the possibility of introducing here new species of plants, for which we believe the climatic conditions are suitable, but which must be grown experimentally before they can be generally introduced. This is a work which falls within the province of the Agricultural Department, and we shall accordingly limit ourselves to a brief discussion of the question from the industrial side.

Section 16.

BEET SUGAR.

Experiment required.

The manufacture of Beet sugar would be of the greatest value to the Colony, and we think that no time should be lost in making decisive experiments as to the possibility of growing beet in the Orange River Colony of the required sugar standard. We are aware that this depends as much or even more upon the cultivation as upon the soil and climate, but we think, if the crop is as remunerative as it is claimed to be elsewhere, that the farmers will be ready to go in for it.

We received a letter on the subject from the Bethlehem Farmers' Association who were anxious to make an experiment with Beet sugar (App. XVII. P.) and we have accordingly supplied them with 200 lbs. of seed. A small quantity will also be sown at Mushroom Valley. The result of these experiments will be awaited with interest.

Benefits from Sugar Manufacture.

The benefits which might be expected from the introduction of beet sugar manufacture cannot be more forcibly put than in the following extract from a Report of Professor Sullivan on the Cork Industrial Exhibition :—

"(1) The employment of the rural population. The manufacture of Beet sugar is essentially a rural industry. It demands the highest possible tillage—kitchen-garden cultivation in fact, and consequently gives employment to a proportionately larger number of men and wives and children of labourers. When the crop is gathered many of those employed in the village find employment in the factory until field work re-commences in Spring.

(2) The improvement of agriculture. The effect of a beet sugar factory on the agriculture of a neighbourhood is extraordinary—slovenly tillage is no longer possible where every root has to be looked after individually, and the whole crop subjected to a complete analysis, upon the result of which depends the success of the cultivator, who is thus forced to learn the life history of his plants, their diseases, pests, and the conditions upon which the special quality wanted—in the case of beet, richness in sugar—depends. The waste animal charcoal and scum provide him with a convenient source of artificial manure, and the exhausted pulp or sliced root afford him one of the most useful cattle foods to be had.

Experience has proved on the Continent that the introduction of the sugar industry revolutionizes the agriculture of a district, and in no department is the effect more marked than in the increase of the number and quality of the cattle.

(3) The great number of chemical and mechanical operations through which beet-root passes in the making of sugar from it, the variety of the machines, apparatus, and the economical use of them both for power and heat, make a beet-sugar factory one of the best schools of practical science known, and, accordingly, in every place where the sugar manufacture has

succeeded, it has led to the creation of machine workshops and many other branches of trade. In France it has been undoubtedly the chief creator of boiler-makers' and engine-fitters' shops, coppersmith work and improved agricultural implements.

(4) It is needless to point out that such an industry demanding the highest scientific and practical skill must exert a very great influence on the intelligence of the rural population, many of whom are engaged in it, from the ploughing of the field to the packing of the sugar.

(5) And lastly, the establishment of such an industry in our midst would open a new career to young men of ability and energy, as engineers, chemists, etc., a benefit of real importance to the welfare of the Country."

If a sufficient supply of beets can be guaranteed we believe that capital will be forthcoming to manufacture them, especially with the encouragement of a bonus which Government would doubtless be ready to grant.

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Section 17.

VEGETABLE OILS, GUMS AND DRUGS.

Castor Oil.

Mr .Hewitt's evidence (P. 97) on these subjects is worthy of serious consideration, and we hope that experiments will be made on an extensive scale with both linseed and castor oil. The demand for castor oil is enormous. The C.S.A.R. alone state their consumption for the year ending 1904 at 59,556 gallons (Letter from Traffic Manager App. XXII. P. 102) and the plant grows extremely well here. Experiment is required as to its seed bearing qualities in a temperate climate. It is naturally a tropical plant, and it is possible that the yield here might not be sufficient to make it worth growing. Fresh seed would have to be sown every year, though in countries not liable to frost the plant is perennial.

The manufacture of the oil is simplicity itself; there is no refining, only boiling, pressing and filtering. For medicinal purposes the oil is pressed cold.

Linseed Oil.

Linseed Oil is obtained in the same manner, and the cultivation of flax both for this purpose and for fibre is certainly worthy of immediate attention.

The various drugs given in Mr. Hewitt's list should also be tried. (App. XX. P. 101).

SECTION 18.

FIBRES.

Flax and Hemp.

The climatic conditions here are favourable for the production of flax and hemp—the latter grows wild, but its sale is forbidden by law.

Wild Cotton.

A species of what was believed to be wild cotton is found in many parts of the Orange River Colony. It appears, however, that this plant is not the true cotton plant and is not of great commercial value. (Letter from Mr. Dunstan. App. XXIII. P. 107).

Rhea.

The Agricultural Department are experimenting with this, and also with Rhea, a new fibre claimed to be equal or superior to cotton.

Broom corn.

Broom Corn, which belongs to the same family as Kaffir Corn, is a plant which we hope to see introduced here. We believe that the conditions here are quite suitable to the plant, and it has a considerable industrial value. The manufacture of brooms as a home industry has been largely developed in Hungary in the last 15 years, and broom corn is now produced there in such quantities that a surplus is exported to America (Evidence of Mr. Pirnitzer Q. 4—see also Messrs. Shaw's letter App. XXIV. P. 108).

The manufacture of brooms as a home industry.

SECTION 19.

THE MILLING INDUSTRIES.

Mr Horsfall's suggestions as to the improvement of wheat.

We have heard evidence on this subject from Mr. Hornby of this Town, and Mr. Horsfall, a miller of great experience, both South African and English. Some interesting suggestions were made by him as to the best methods of improving our wheat (Evidence of Mr. Horsfall Q. 1) a matter which is being taken up by the Agricultural Department, as well as the possibility of producing a wheat here which can be manufactured into Semolina.

The various products of Maize, viz. :—Cornflour, Samp and flaked maize—the latter now largely used by Brewers (Mr. Horsfall Q.Q. 14—15)—should certainly be manufactured in a Maize-producing country, and could be combined with the ordinary Milling business.

Products of maize.

In the year ending 1904 articles manufactured from Maize, not including mealie meal, were imported into the Orange River Colony to the value of £20,000. The advantage of keeping this money in the country needs no demonstration.

Imports of articles manufactured from maize.

We have reason to believe that Millers are inclined to take up the manufacture of these articles, and we recommend that a bonus be offered for a minimum production, to be hereafter fixed, of any foodstuffs manufactured from South African Cereals, not being wheaten flour and meal or mealie meal.

Bonus recommended.

SECTION 20.

LOCAL MANUFACTURE OF INK.

It appears from the evidence of Mr. Hewitt that he can manufacture ink in Bloemfontein equal to the best imported ink at a price about 25 per cent. lower. (Evidence of Mr. Hewitt Q. 3 Q. 11).

Inks can be manufactured in Bloemfontein equal to imported ink, and at a lower price.

Samples of this ink have been tried in the Auditor-General's, Colonial Secretary's, and Superintendent of Stationery's Offices, and have been found satisfactory in ordinary use. A Report of the Superintendent of Stationery on these inks will be found in App. XXV. P. 120.

Samples have been sent to the Government Laboratory for analysis, and if the chemical test is satisfactory, we recommend that the locally manufactured inks should be adopted for use in all Government offices in preference to the imported inks.

Recommendation that local ink should be used in Government Offices.

SECTION 21.

SALT.

This Industry seems to be reviving since the Railway Rates have been reduced, and not to require Government assistance. The manufacture of table salt is

Table salt.

No assistance required.

a simple process, and does not require any machinery beyond a mill for grinding. It is quite within the scope of private enterprise, and the results to be expected are not sufficient to justify Government offering a bonus.

No immediate means of reducing price of rock salt.

Your Excellency wished us to consider whether any assistance could be offered which would reduce the price of rock salt so as to increase its use for agricultural purposes. The whole cost of salt is involved in labour and transport, and since neither of these items can be reduced at present, we do not see how any help which Government might offer could have the desired effect.

SECTION 22.

HOME INDUSTRIES.

Home industries specially important for this Country.

This is a subject which ought to be of special interest to all who are anxious to preserve unimpaired the traditional farm life of the Country. Industries such as we have hitherto discussed must be carried on in Towns, or at any rate on the Railway. There must be Employers and Employees, who must to a certain extent give up their independence and conform to the restrictions of factory life.

The Home Industries are under no such limitations. The worker in these is both master and man—his factory is his own home—his stock-in-trade a few simple tools and the skill of his hands—his raw material is grown on his own or neighbouring farms. There is no sacrifice of the freedom and the fresh air, which the people of this Country consider their birthright.

Such work does not interfere with agriculture; it is subsidiary to it, filling up the intervals, when there is little to be done on the land, with an occupation which is educational, interesting, and when properly organized, remunerative.

It does not break up the family, but, like agriculture itself, binds parents and children closer together by increasing the dependence of each on the other, and uniting them in the difficulties and successes of a common task.

All observers agree that "wherever Home Industries flourish in combination with agriculture, the population enjoys a relative well being,"* and much attention and money have been devoted in various Countries to organizing the Home Industries already existing, and introducing new ones, this being considered the most effective means of keeping the people on the land.

Organization necessary.

It is only by organization that these industries can survive. "The isolated artizan is at a hopeless disadvantage when it comes to the sale of his produce, and unless the workers combine, or by some other means a market is secured, they are at the mercy of the dealers, and prices are brought down to starvation level."*

Although in many Countries the Factory and the Workshop may be found side by side, the latter tends to disappear, except in the artistic handicrafts, and "those industries where the direct intervention of taste and inventiveness are required, and where new patterns must be constantly introduced. In these there is a wide field for the home worker."†

Value of Home Industries of Hungary.

Mr. Pirnitzer in his instructive account of the Cottage Industries of Hungary gives a list of those flourishing there, the annual value of which he estimates at £300,000 to £400,000 (Q.Q. 2.3.).

Of Russia.

"The annual value of the minor industries of the Russian peasants is about £5,000,000, that of their handloom weaving being about £2,500,000. The following are a selection from the catalogue of Cottage Industries at the Russian Cottage Industries Exhibition:—Handloom weaving of linen and wool carried on in connection with small local factories and kept up to date by the supply of the newest designs; almost all the leather trades, Saddlery and Harness making, Boot and Shoe Making; all kinds of earthenware, from the simplest jar to artistic china; all kinds of wooden ware; Wickerwork; all kinds of articles made from felt and rabbit fur, including hats; combs, brushes; various articles made from horn and bone; gloves; straw hat making; basket making; knitting; fancy sewing and embroidery."

Carried on in combination with agriculture.

"All these industries, and hosts of others, are carried on in connection with agriculture, and they are all more or less successful, the least successful of them

* Kropotkin, P. 157, id. P. 167.
† Kropotkin, P. 164.

suffering only from the exploitation of the artisans by the dealers in raw material and the wholesale buyers of the work."*

Possibility of their introduction into the O.R.C.

We have now to consider whether it is possible to introduce into the Orange River Colony any of these industries, and the best means of doing so. As we have already said, it will not be an easy task, and the beginnings must be tentative. If we have many difficulties to face which are peculiar to the Country, we have some advantages. The goods of our competitors are burdened with heavy freight and other charges, and we have a population who, however devoid of industrial training, are self-reliant, resourceful and teachable.

System employed in Hungary.

Mr. Pirnitzer explains the system by which Cottage Industries have been developed in Hungary at an annual cost to the State of about £70,000. This sum is spent in providing teachers, in advances to the Chamber of Commerce or Communal Authorities for the purpose of purchasing tools or raw material, and for the purchase of the finished articles from the peasants, who thus receive cash for their work and are relieved of the difficulty of finding a market for it. (Q. 8). The State also holds Exhibitions, offers premiums for work of exceptional merit, and establishes depots abroad for the sale of Hungarian articles. Teachers are obtained either by introducing skilled artisans from abroad, or by sending intelligent Hungarians to learn the Industries of other Countries, which they teach on their return. Instruction is given chiefly during the Winter months, when the people are not employed in Agriculture. The children are taught in schools, of which there are 40 to 45 exclusively for teaching Industries; and the older people by travelling teachers (Q. 15).

Schools for teaching industries.

As the Industries become established the need for special schools for teaching them disappears. A class of skilled artisans is produced who can teach their trades to apprentices or to their own families.

This system was begun on a small scale and has gradually increased to its present completeness. (Q. 27). It has been instrumental in developing Pottery, Broom and Basket Making, all introduced within the last 15 years (Q. 11) and now flourishing industries.

*Abridged from Recess Committee's Report, P. 37.

SECTION 23.

Application to O.R.C.

Basket making.

The beginnings we shall recommend here will also be on a small scale, and will in fact be limited to one trade, that of Basket Making, for which we consider the prospects promising. Some excellent work has been done at the Normal School with imported cane, and the pupils have shewn great natural aptitude for the work. But the price of imported cane would make it impossible to develop the industry on commercial lines, and there is not the slightest need to go outside the Colony for the raw matrial. Osiers will grow well in the spruits and along the river banks of this Colony, and will yield a return the second year after planting. The Agricultural Department has already distributed some slips, and we hope that the cultivation of Osiers will be greatly extended.

Cultivation of Osiers.

Evidence of Mr. Ingle.

Conclusions.

We were fortunate in obtaining very complete information on the whole subject from Mr. Ingle, who has been teaching it to natives at Lovedale for two years with excellent results. After hearing his evidence (P. 125) we have come to the conclusion (1) That this is a trade which it is comparatively easy to teach; (2) That there is a good demand for baskets of all kinds and that they can be produced at a price which will leave a sufficient margin for profit (Q. 33. Q. 54); and (3) That the cost of developing the industry would be trifling.

From the letter from the Superintendent of the Tokai Reformatory (App. XXVI. P. 134) we see that their sales have increased from £21 3s. 4d. in 1898 to £1,430 in 1903.

Mr. Ingle tells us that a good teacher could be obtained at from £15 to £20 per month (Q. 31) and the tools required would cost perhaps £2 per workman (Q. 30).

Basket making, School and Workshop.

He recommends (Q. 48) that the instruction should be given in what is known abroad as an "Atelier d' Apprentissage," a Workshop in which the Master carries on his trade, and at the same time imparts it to apprentices. The number suggested (Q. 37) is six apprentices to begin with, to whom additions might be made every six months up to a maximum of 24. As the apprentices mastered the trade they would leave the workshop and set up for themselves, or be

employed to teach others. By this means an Industry would be quickly worked up, and the Workshop should be self-supporting after the first year (Q. 38).

Recommendation.

We presume arrangements could be made for such a workshop either in the Industrial Home if it is reorganized, or in some other Institution, and we strongly recommend that a teacher should be appointed at a salary of £15 per month and a share of the profits, and a sum of £100 be set aside for tools, materials, etc.

Section 24.

SPINNING AND WEAVING AS HOME INDUSTRIES.

Homespuns in Scotland.

Mr. Gunn's Report on the production of homespuns in Scotland (App. XXVIII. P. 137) gives a very clear and complete account of this interesting industry, which has been successfully introduced into Ireland. Our Interim Report contained a recommendation that its introduction should be attempted here, which provoked considerable criticism.

Best to wait till the Factory at Harrismith is working.

The chief expense connected with the Industry would be the provision of Carding Mills, which appear to be essential, and we have therefore come to the conclusion that it would be better to wait until the Blanket Factory at Harrismith is working. We should then be able to experiment without any great expense, as the Carding could be done at the Factory. We might also be in a better position to judge whether the people are likely to take to the work.

Section 25.

OTHER HOME INDUSTRIES.

Lace and Embroidery Classes under Education Department.

Classes in Lace Making and Embroidery have been held by the Education Department at Harrismith, Bloemfontein and Smithfield, and have been full of promise for the future.*

The Technical Education Commission.

The educational side of these industries and the others we have mentioned will doubtless be fully considered by the Technical Education Commission, whose Report will, we hope, make it possible to further extend the teaching of them.

* Report of Director of Education, O.R.C., 1904 P 15

There is no reason why they should not be developed and organized so as to have in time a commercial as well as an educational value to those who practise them. The difficulty of finding a market for such work in South Africa will be considerable, but should diminish as time goes on. It should be one of the duties of the Industrial Board to consider this question of markets, and to do everything possible to create them.

Effort must be made to develop these and kindred industries.

SECTION 26.

INDUSTRIES AS TO WHICH NO RECOMMENDATIONS ARE MADE.

We have taken no evidence on the following Industries, Silk, Indigo, Chicory, and Furniture Making, as after due consideration we do not think their introduction feasible. The subject of beekeeping is occupying the attention of the Agricultural Department.

SECTION 27.

SUMMARY OF RECOMMENDATIONS.

It will perhaps be convenient if we now summarize our recommendations, distinguishing those which require immediate expenditure from those which relate to a future more or less distant.

Summary of recommendation.

The following are the Industries on which we hope a Bonus will be payable within the next three to five years. We do not think that any expenditure will fall on the Estimates for the current year with the exception of the Bonus for the Preserving Factory and the advance for the Pottery Works in Bloemfontein.

Industry.	Action Recommended.	Approximate Estimated Cost.
Wool	Bonus for 3 years ...	Minimum of £500 p.a.
Leather	„ „ 5 „ ...	„ „ £550 „
Preserving	„ „ 5 „ ...	„ „ £200 „
Cement	„ „ 3 „ ...	£1,000 p.a.
Tobacco	„ „ 3 „ ...	Minimum of £300 p.a.
	Appointment of Expert	Salary of Expert, £450 p.a.
	Establishment of Curing Depot ...	Expenditure on buildings £1,000.
Pottery	Advance for small Works in Bloemfontein	£600.
Basket Making (Home Industry)	Appointment of Teacher	£180 p.a. Salary and £100 for tools, presuming building available.

Section 28.

Acknowledgment.

In concluding our Report we wish to express our thanks to those who have been good enough to give us the information which we now submit for Your Excellency's consideration. We trust that the facts which we have obtained through their assistance may have some permanent value, and may form a reliable basis for action, both public and private.

We also wish to express our very high appreciation of the services of Mr. Cohen, the Secretary of the Commission, and to testify to his untiring devotion and zeal in connection with our work.

We have the honour to be Your Excellency's

obedient Servants,

(Signed) J. H. MEIRING, Chairman.
H. J. McLAUGHLIN, Lt.-Col.
B. H. O. ARMSTRONG.
H. F. GILL.
M. LEVISEUR.

W. S. COHEN, Secretary.

November 11th, 1904.

EVIDENCE, DOCUMENTS, Etc.

Industrial Commission

EVIDENCE,

DOCUMENTS, ETC.

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IX.

DIGEST OF EVIDENCE.

WOOL.

March 22nd, 1904.—Mr. S. Gasson, Messrs. Gasson and Co., Bloemfontein ... ... P.P. 1-2.

1. Wool suitable and quantities sufficient for spinning and weaving cloth.

2. Cheaper to send the wool home than to treat it here because freight and railage kill the washing industry in this Country.

April 29th, 1904.—Mr. J. Reyburn, late manager of the Newcastle Wool Factory ... ... P.P. 2-5.

Failure of Newcastle Factory due to mismanagement, antiquated machinery and the production of unsuitable patterns.

Wool not easy to introduce as a Cottage Industry because a long apprenticeship necessary ... . Q.Q. 1-4.

Processes of treating wool ... ... Q.Q. 6-7-13.

Under proper management and with proper designs the Factory would have been a success ... ... Q. 8

Cost of Machinery to turn out 80,000 yards, £10,000 ... ... Q. 9

Would employ 35 white men or more ... ... Q. 10

Cost of production of the cloth, 1s. 11d. per yard; market price, 3s. 6d. ... ... Q. 14

Locality of the Factory to depend upon the coal supply ... ... Q. 16

BLANKETS.

August 20th, 1904.—Mr. W. W. O'Shaughnessy, representing Messrs. Edward E. James and Co. ... ... P.P. 6-7.

Proposes to establish a Blanket Factory, thinks Harrismith a suitable place, would require 10 morgen of ground, arranges to visit Harrismith with Chairman ... ... Q.Q. 3-4

LEATHER.

March 10th, 1904.—Mr. Arthur Roberts, manager of the Middlemore Tannery, King Williams Town ... ... P.P. 13-17.

Every kind of tanning done at his factory as well as harness and bootmaking; hides obtained from Johannesburg, the local hides being spoilt by ticks.

Uses South African Wattle Bark	Q.Q. 1-13
Produces leather equal to home leather. South African factories have failed through not having had skilled man in charge	Q. 15
Describes in detail the tanning process; prices of hides and skins	Q.Q. 17-24
The proportion of skilled labour to unskilled labour about equal	Q.Q. 30-34
Plant to turn out 50 hides a week about £700	Q.Q. 35-37
Thinks the climate of the O.R.C. would suit excellently for a tannery owing to the cold winters	Q. 39
The profit from a tannery larger than in England owing to the expenses there being heavier, and the tanning processes taking longer	Q. 48
About 5,000 gallons of water a day necessary for a tannery turning out 50 hides a week	Q. 51
Wages—Unskilled, 5s. a day ... ... Skilled, £3 a week	Q.Q. 52-53
March 10th, 1904.—Mr. E. J. Cane, Fell Monger and Wool Scourer	P.P. 18-25
Experience all Australian and only of light tanning and "preserving" the skins for manufacture into leather in England. Considers this the most profitable plan	Q.Q. 1-15
It is almost universal in Australia	Q. 18
Australian boot manufacturers cannot compete with American	Q. 20
Used wattle bark. Price about £6 per ton to £6 10s. Describes Australian plan of getting up skins and hides and other products for market ...	Q. 24-28
Brokers send out representatives among the farmers who show them the most profitable methods ...	Q. 35
Gives technical details of processes	Q. 35
This system should be introduced into South Africa	Q.Q. 39, 49-57
Tallow	Q. 41-48
Preparation of skins	Q. 62
Proportion of skilled to unskilled labour	Q.Q. 66-68
Plant	Q.Q. 71-72

March 5th, 1904.—Mr. Reisig, late of Ventersburg Road Tannery ... ... P.P. 25-27

Machinery and pits for tannery with capacity for 3,000 hides would cost £1,000

Working capital, £2,000 ... ... Q.Q. 6-9

Elandsboontje the best tanning material known to him. 70 lbs. required for a hide of 35 lbs. ... ... Q.Q. 10-12

Two practical white men and six blacks for a tannery of 3,000 hides ... ... Q. 13

March 3rd.—Mr. W. A. Davis, Saddler, etc., Bloemfontein ... P.P. 27-29

Has been in business in Bloemfontein 20 years ... Q. 1

Uses mostly Colonial leather which is cheaper than imported leather ... ... Q. 4

It is just as good but not so well finished ... ... Q.Q. 6-7

Mr. Reisig's leather was good, equal to Cape leather ... ... Q.Q. 9-11

Believes from his own experience there would be an opening for a tannery here ... ... Q.Q. 29-32

All the materials are on the spot ... ... Q. 43

March 3rd, 1904.—Mr. Frank French, local manager Messrs. Fraser and Co., Cape Town ... ... P.P. 29-33

Is local representative of Messrs. Fraser, who do a very large business in Cape Town in all leather goods ... ... Q.Q. 1-4

Uses both Colonial and imported leather, the latter for fine work ... ... Q. 5

Does not think leather can be tanned here as well as in England ... ... Q. 8

Messrs. Fraser use Cape Wattle as well as chemical tanning ... ... Q.Q. 9-11

But there is nothing like Oak Bark ... ... Q.Q. 12-13

Leather dressed in Colony not suitable for portmanteau or bags ... ... Q. 16

Quite suitable for rough work, such as mule harness, though it will not look as well as English leather ... ... Q. 20

Leather used by witness in Bloemfontein mostly dressed at Messrs. Fraser and Co.'s tannery, Cape Town ... ... Q. 26

There was a tannery in Pretoria which dressed only rough leather, employing imported labour ... Q.Q. 37-39

Messrs. Fraser do not employ Boers for making saddlery, the work is too skilled for them ... ... Q.Q. 41-42

Is doubtful whether a tannery would pay in the O.R.C., though there is a good market for the manufactured article ... ... Q.Q. 63-64

March 5th, 1904.—Messrs. John and Philip Botha ... ... P. 33

Elandsboontje very plentiful in his district ... ... Q.Q. 1-4

Always used by farmers for tanning ... ... Q.Q. 6-7

JAM AND FRUIT PRESERVING, SWEETS, ETC.

February 25th, 1904.—Mr. Schroder, late manager of Anderson's Confectionery Works, Port Elizabeth ... P.P. 37-41

Considers that preserving and sweet making in the O.R.C. must to a large extent rely on imported sugar, Natal sugar not having reached a sufficiently advanced stage of refinement.

The difficulty of procuring suitable labour, the Railway rates on sugar, tin plates, wood for the cases, would greatly handicap the manufacturer here; he would require Government assistance.

Jam making, sweet making, canning, could largely be developed in the O.R.C. but the industry would require nursing. The labour difficulty would be very serious. The fruit grown in the O.R.C. is particularly suitable for jam making as it has a decided flavour. The fruit could be brought three days' waggon journey without harm.

February 7th, 1904.—Mr. Shaw Scott, Chief, Horticultural Division, Agricultural Department ... ... P.P. 41-43

Fully convinced there is money in fruit growing in the O.R.C. if managed on commercial lines.

The O.R.C., especially at Parys and the Conquered Territory, very suitable for fruit growing, particularly prunes.

Recommends canning, evaporating and sterilising rather than jam making.

A beginning might be made in a small way, say, at Parys, and be gradually developed. Evaporators and sterilizers might be placed at other centres and the people bring in their fruit to have it properly treated.

Jam making would be probably too costly.

A sterilizing and evaporating industry could be started at no great expense.

March 12th.—Mr. H. A. Biden, Tempe Civilian Mess ... ... P.P. 43 45

Has been in business as sweet manufacturer both in Canada and South Africa.

The great drawback to the business here is the duty on sugar.

Has used Natal sugar, but prefers the best refined The next drawback is the cost of importing packing material.

Some means of cheapening the cost of production must be found either by rebate or bounty or reduced railway freight.

Witness would be prepared to begin on a small scale with Government assistance.

21st April, 1904.—Mr. H. H. Beamish. Mr. Hatton (representative of Messrs. Crooks and Co., East Loudon) ... ... P.P. 45-47

Mr. Beamish prepared to invest £1,000 in factory at Parys for making jam, preserves, etc., if Government will assist by bonus, reduction on freight, free site, etc. Mr. Hatton's firm prepared to support Mr. Beamish in this venture.

Mr. Beamish will make it his aim to employ as many white people as possible.

CEMENT.

June 2nd, 1904.—Mr. M. Gotthard ... ... P.P. 56-58

It is useless manufacturing here anything but the very best cement. That depends in the first place on the quality and quantity of the raw material... ... ... Q. 1

As far as his experience goes suitable raw material does not exist in the O.R.C. ... ... Q. 2

Chemical test alone not sufficient ... ... Q.Q. 3-4

A factory must produce at least 60,000 casks annually to be worked successfully ... ... Q. 9

This would require a capital of £50,000 ... ... Q. 11

Ten or twelve good white men might be employed the rest would be natives ... ... Q. 13

XIV.

SILBESTOS.

May 5th, 1904.—Mr. A. Silbiger	P.P. 60-63
Cost of Silbestos compared to brick	Q. 1
Raw material required to manufacture it	Q. 3
Silbestos could be sold for price of corrugated iron or less	Q. 7
Labour required 25 to 50 white unskilled labour	Q. 8
Capital required for Silbestos factory £20,000 ...	Q. 12 Seq.

TOBACCO.

March 1st, 1904.—Messrs. John and Philip Botha, Rhenoster Poort, Vredefort	P.P. 64-66
Have been growing tobacco all their lives in Vredefort district	Q. 1
Grow about 300,000 plants annually on 8 morgen which yield about 75,000 lbs. tobacco	Q. 2-4
Average price 9d. per lb. raw, 1s. cured	Q. 5
Explains process of cultivation and curing	Q. 6-10 Q. 16-19
Would be glad of a factory as they could increase their production and it would equalise the price	Q. 11-13
Could grow tobacco for cigarette making if there was a market	Q. 23
Factory should be near the fields	Q. 26
February 27th, 1904.—Mr. G. Shaw Scott, Chief, Horticultural Division, Agricultural Department	P.P. 66-67
Considers the Orange River Colony a most promising field.	
Our tobacco is better than the Cape Tobacco in spite of the primitive methods of growing and curing in the Orange River Colony.	
Improvement required in the selection of the seed, cultivation and curing.	
Recommends a Central Tobacco Factory not too far from the Fields. In the Vredefort District the cost would not be great.	
An expert would be required.	
August 11th, 1904.—Mr. W. J. Wallis, late Manager, The Cango Tobacco Factory	P.P. 68-74
Conditions necessary for growing good tobacco	Q.Q. 1-4
Varieties of Seed	Q. 5
White Burley	Q. 6
Seed distributed free to farmers at Oudtshoorn	Q. 7

Watering, Cutting, Drying	Q. 10 Seq.
Manufacturing processes	Q. 16 Seq.
Sorting	Q. 17
Dip	Q. 20
Cost of Machinery, £650	Q.Q. 25-28
This would deal with 300,000 lbs. weight annually ...	Q. 30

POTTERY.

25th April, 1904.—Mr. T. W. Preece	P.P. 80-81
Pottery is suitable as a home industry. A good deal of the work is done by women in England.	
A fair sized factory could be established with a capital of £5,000.	
27th May, 1904.—Mr. O. Valentine	P.P. 81-83
Would require to have the capital for machinery advanced, has no capital of his own	Q. 2
Would bring three potters from Italy	Q. 10

VEGETABLE OILS, GUMS AND DRUGS.

March 19th, 1904.—Mr. S. S. Hewitt, Messrs. Heynes Mathew & Co.	P.P. 94-97
Great importance of Castor Oil as a commercial product.	
Process of extracting oil very simple, machinery required trifling	Q. 2
Demand enormous	Q. 3
Linseed Oil should also pay	Q.Q. 4-6
Gum extracted from thorn trees ought to have a good sale	Q.Q. 7-11
Stramonium is a valuable drug and grows wild here ...	Q. Q. 12-14
Drugs which might be tried	Q. 14
June 4th, 1904.—Mr. P. W. Wintle, Relief Works, Mushroom Valley	P.P. 97-98
Has grown experimentally at Mushroom Valley, Castor Oil, Gram, Linseed, Millet, &c.	Q. 1
Castor Oil gave good yield	Tabular Statement.

FIBRES.

June 24th, 1904.—Mr. J. H. Jarvis	P.P. 100-104
Has had experience in jute, hemp and flax	Q. 3
Jute is a tropical plant, but hemp and flax will grow where cereals grow	Q. 5

Cost of machinery for working flax, £1,500 ... ... Q. 12

Rhea is not yet a commercial article ... ... Q. 29

THE MILLING INDUSTRIES.

March 25th, 1904.—Mr. Hornby, Messrs. W. F. Hornby & Co. Wheat here not suitable for Semolina. P.P. 107-109

Process of manufacturing Semolina.

The flour grown here would be quite satisfactory for biscuit making.

Great variations in the Basutoland wheat.
Oats and rolled oats.

Samp requires special machinery, is doubtful if it would pay to manufacture it here.

Considers biscuit making promising in conjunction with an ordinary milling business.

July 18th, 1904.—Mr. Horsfall, of Messrs. Mallett & Co., E. London, late Messrs. Turners, Ipswich. ... ... P.P. 109-113

Has made a special study of wheat for 25 years ... ... Q. 5

The wheat grown in South Africa is inferior ... ... Q. 7

System adopted by Messrs. Webb, Lincoln, to improve the varieties of seed wheat ... ... Q. 9

Recommendatons for improving the wheat grown here Q. 11

Maizena. corn-flour, flaked maize; considers the latter would show a good return ... ... Q. 12

It is possible to make semolina, wheat flour, corn-flour and flaked maize with one plant with certain modifications ... ... Q. 13

Oatmeal wants a plant to itself ... ... Q. 14

Action of flaked maize in brewing process ... ... Q.Q. 15-16

Our wheat suitable for biscuits ... ... Q. 21

But requires better cleaning ... ... Q. 22

INK.

July 7th, 1904.—Mr. S. S. Hewitt ... ... P.P. 114-116

Practically all raw material obtainable in O.R.C. ... Q. 1

The manufacture of ink presents no difficulty, the difficulty is in overcoming the prejudice against Colonial manufactures ... ... Q. 3

Could manufacture here at from 3s. 6d. to 5s. per gallon ... ... Q. 6

Would propose to supply large consumers, such as Government, which would obviate the necessity of importing the jars ... ... Q. 9

Would hope to turn out 1,000 gallons per month ... Q. 11

The plant would cost £500, exclusive of buildings ... Q. 12

Would suggest that Government should provide the building ... ... Q. 17

Is confident the ink could hold its own if given a fair chance. It could be sold at a profit of 3s. 6d. per gallon Q. 22

HOME INDUSTRIES.

May 3rd, 1904.—Mr. Pirnitzer, Austro-Hungarian Trade Commissioner ... ... P.P. 118-121

Cottage Industries in Hungary chiefly in poorer Districts and in the Winter months ... ... Q. 1

Annual value, £300,000 to £400,000 ... ... Q. 2

Consist chiefly of weaving, broom and brush making, wood work, leather, boots and shoes, pottery and basket making.

The broom industry is now self supporting and broom corn is exported to America ... ... Q. 4

Basket making; Government offers bonus for growing of Osiers ... ... Q. 5

Methods of establishing Cottage Industries in co-operation with local authorities ... ... Q. 7

The great difficulty is to find a market for the goods produced ... ... Q. 8

Educational methods ... ... Q. 9

Broom and basket making and pottery are quite new Q. 12

Government spends £70,000 a year on Cottage Industries ... ... Q. 13

Instruction is given both at schools, of which there are 40 to 45, and also by travelling teachers ... ... Q. 15

The teachers are mostly intelligent Hungarian artisans ... ... Q. 17

Supported by local authorities ... ... Q. 20

Encouragement is also given to larger industries by bonuses on production, no taxation on raw materials and cheaper railway rates ... ... Q. 23

Is convinced the money spent in this way has paid the country ... ... Q. 27

Thinks the great difficulty in the O.R.C. would be to create a centre for the Cottage Industries and also to find a market ... ... Q. 28

The Hungarian Protective Duty is about 30 per cent. ad valorem, but raw material for manufacture is free — Q. 31

Tanning is a considerable industry—mostly the quick or chemical tanning ... ... — Q. 33-34

BASKET MAKING.

August 4th, 1904.—Mr. C. J. Ingle, Instructor in Basket Making, Lovedale, C.C. ... ... — P.P. 122-129

Cultivation of Osiers ... ... — Q. 1-11

Treatment after cutting ... ... — Q. 12-15

Wages in England ... ... — Q. 17-18

Baskets made in Lovedale by native girls ... ... — Q. 19

Sold at 2s. 3d., cost of material about 9d. each ... ... — Q. 21

Has used the native grasses and likes them ... ... — Q. 29

Plant and tools required ... ... — Q. 30

Thinks there will be a ready sale for basket work ... — Q. 32

A class for basket making should not be larger than 12 or 15 ... ... — Q. 36

Recommends a teacher having apprentices ... ... — Q. 37

The industry should be self supporting after it gets a fair start ... ... — Q. 38-39

Thinks that natives accustomed to work in rushes and grasses would have a good foundation for basket making ... ... — Q. 37

Describes the Sussex system of introducing ... ... — Q. 48

In England the apprenticeship is at least three years — Q. 52

A rough basket ought to be produced for from 12s. to 15s. a dozen ... ... — Q. 52

LACE MAKING.

March 8th, 1904.—Miss Wilson, Directress of Industrial Training, Educational Department, O.R.C. ... ... — P.P. 130-131

The girls at the Normal School are fond of lace making and some show great aptitude.

The material required is very cheap. Several girls have been trained at the Normal School and are now teaching others.

It would not be necessary to send home for teachers. There are three paid teachers at the Normal School. Recommends that four or five paid teachers should be appointed for a few years.

Thinks that knitting might also be introduced.

EVIDENCE, DOCUMENTS, ETC.

EVIDENCE OF MR. GASSON.—22nd March, 1902.

MR. MEIRING explained to Mr. Gasson that the Commission had already procured most of the information required on the subject of spinning and weaving of wool from the documents which had been obtained, when it was thought expedient to start this industry at the Concentration Camps, and that what was now wanted was Mr. Gasson's opinion as to whether the wool of this country would be fit for use in spinning and weaving as a Cottage industry, and generally, whether he thought there would be sufficient for such an undertaking on a small scale, or whether he thought the Commission were justified in attempting the industry on a larger scale.

MR. GASSON:—To begin with, Mr. Meiring, the wools are suitable—the quantities, I should think, are sufficient. Some people shear only once a year, others every six months. The short wools are what we term the clothing wools; they are used for ordinary cloths; they are not long enough for combing. The long wool is quite suitable for homespuns; you can use both classes. I can give you the name of one of the largest spinners in England, who is more of a philanthropist, and takes a great interest in all his people. His name is William Clegg, Milnrow, near Rochdale, Lancashire. He employs a great deal of machinery. He made an alteration in one of his rooms recently, and for the machinery alone he paid £20,000. He works with the skins from the beginning right to the end. He takes the skin; has the wool sniped or taken from it; washes the wool, and, in fact, manufactures it right to the flannels; he mostly makes flannels. He generally gets War Office contracts. He would be able to give you a lot of valuable advice. I know about the raw material, but beyond that I know very little. I think you might get some valuable information from Natal. There was a Woollen Factory in Grahamstown—they also had a branch at Cape Town, but neither of these were successful—one reason for the failure, probably because people like to have a big selection of patterns, and object to be dressed in the same pattern of cloth as their neighbour, and to make a factory successful you cannot turn out just a few yards of one pattern—you must have thousands of yards.

We have the blue wools—you can always tell where they come from, more or less from the hills; we can always tell the mountain wool. A lot of these wools are quite free from any sand. The wool washed by the Boers, as a rule, would not be in a fit condition for weaving and spinning into good cloth. I would not allow them to treat a good wool. At the Uitenhage, or the King Wool-Washery, it might be done well enough, but most of the others require to be treated again. The carbonising process is necessary to remove the vegetable matter from the wool—that is, to remove very small seeds which might be crushed up in the machinery. It is rather an expensive process. I have never seen the carbonising

process, but I am of opinion that you require machinery for it, not merely a chemical process. I do not think the wools used for a home industry would require to be carbonised—this year, probably, your wools would require to be carbonised because the grass is in seed, they get that very fine seed. In good seasons you have the bigger seeds to contend with, it is like burweed—the carbonising process would remove all that; you could not do it any other way. I could not say what quantities of wool you could collect in the Orange River Colony just now, but I should think more than would be required for a factory. I am afraid the farmers would not take the trouble to spin and weave their own clothing; if they did it during the War, and have stopped it now, I think that is proof that they are tired of it. In washing the wool, you must use hot water. Potash is used, and in combination with the grease that is in the wool, this makes the soap. It is much cheaper to send the wool home to be treated. In shipping the wool home, there is no allowance made for the washed or unwashed wool. The freight and railage kills the washing industry in this country. I should be very chary of giving a good wool to be washed here. In Australia the wools are treated much more particularly; they are sorted and properly treated at the time of shearing. If the farmer here could be made to understand that the lighter he makes his wool the better, it would be a good thing. If they would go in for fleece-washing it would be much better, but I don't know that it would pay; there is so little to be gained by treating the wool.

(Shows samples of different wools washed by different processes:—Fleece washed, 1s. 1d. per lb.; poorer wash, 9¾d.; unwashed, 6¾d.)

EVIDENCE OF MR. REYBURN.—29th April, 1904.

MR. MEIRING explained that Mr. Reyburn had had large experience in the working of wool, both in Scotland and in the Newcastle Factory at Durban, and asked the Secretary to read to the meeting two reports which Mr. Reyburn had prepared, showing reasons why this factory had proved a failure. From these reports it appeared that the failure had been due to gross mismanagement of the Secretary, and to the wholly unsuitable patterns of cloth which the designer had put through the factory.

MR. REYBURN explained that it was most essential to the success of this business that the pattern made up were of an attractive and tasteful design, and that the designer was in receipt of the largest salary, but that in the Newcastle Factory the material had not sold owing to the very unsuitable patterns chosen by their designer.

Q. 1. Do you think, Mr. Reyburn, that spinning and weaving as a cottage industry would answer in this Colony? In the first place, a loom would not cost less at home than £9, and it is pretty troublesome to work, and if you have it as a cottage industry it will involve that whoever is looking after it would require to go from place to place setting the looms, and looking after them. At home it is only gone in for on these lines in the West of Scotland and the Western Highlands. It is a very old trade, but it is only a little fringe all round these islands. The dyeing is all done by themselves in ordinary big pots. The spinning is done by women. It is a very slow process.

Q. 2. How is the scouring done? Each one does his own wool. They scour it with lye and ash from wood that they burn, not with soap and water as we do. Material

made by hand looms, and looms driven by steam is very different. The hand loom material is full of little lumps and thin places. We can make cloth with machinery, which is a very good imitation of the hand-woven stuff. We use the worst machines we have for making that stuff, with the result, that instead of opening up all the fibre of the wool, it misses places and leaves lumps in the wool. They also dry it and treat it in a peculiar way, which gives it the smell of peat, or something very like it.

Q. 3. Do you think weaving could be easily taught? Well, I am afraid not. The characteristics of the people are not that way; they have not been very active mentally. It is astonishing at home how a lad of 14 can pick up weaving; he seems to pick it up in no time. It took me six months to teach the coolies to weave. I believe, however, if they are at all receptive you might be able to pick out a certain number who would apply themselves, but to set them alone to hand-loom weaving, I don't think it could be done.

Q. 4. You mean weaving with machines? Yes, that is what I taught the coolies. I don't think you will get them to do the hand-loom weaving. It would take them a life-time to get into it; there are so many things in the preparation before you can begin—the threading up and setting of the looms, etc. Our men are all seven years' apprenticed to that, even in the machinery going by steam. In these crofter families in Scotland it is the result of generations; they have been going on for hundreds of years. You would be astonished to see how they make cloth out of primitive machinery. These old looms are worked by treadles, exactly like an organ. The threads have to be set and changed each time according to the pattern; I am afraid it is too intricate to be taught in cottages; I don't think it could be accomplished in that way.

Q. 5. You mean there would be no immediate results? I am afraid it would not be worth the trouble. The first difficulty would be the spinning. If you just take that ordinary Cape wool, it would be difficult to handle. The wool they use in Scotland is much longer.

Q. 6. Clothing wool; how do you spin that? That is the short wool. It is done in the same class of machine, only a difference in what is called the cards. Carding of wool is done on big cylinders.

(Shows illustrations and estimates for spinning machines, 70 feet long.)

For long wool, the carding of these machines requires to be coarser. At home we have machinery for doing long wool only.

Q. 7. With this wool you can make a blanket with the same machinery as you make the cloth? You can spin the wool on these mules. The carding that covers these machines requires to be coarser for wools for blankets. We have what we call blanket looms; that is simpler work. There is no pattern to work. The Basuto blankets are all done in white originally, and afterwards printed.

Q. 8. It is said that the Newcastle Factory had considerable difficulty in disposing of their stuff. No wonder, they made colours that no man in this country would touch. If it had been properly managed there is no reason why it should not have been a success. The success of the trade depends upon the designer.

Q. 9. How did they get their wool scoured? It was all done on the premises. We get the wool from the neighbourhood, scoured and dried it, and did everything

to it. Almost the last thing I did was to make some patterns for the Exhibition at Grahamstown, but which they finally did not show. I made 7 yard lengths, and brought it down to 9 oz. per yard. My patterns all sold very well. A gentleman in Messrs. Parker, Woods & Co., Harrismith, sold 12 pieces about 60 yards a-piece. A carding engine would cost £431 10s.; spinning mules, 9s. 9½d. each; with that, 250 spindles. I estimated that the plant alone would cost £10,000, turning out 80,000 yards. Of course, it is a simple enough matter to put in only one set of carding engines, one set of mules and twisting frame, with two or three looms as you required them.

Q. 10. How many men would that employ; that is, one fast loom, four spinning looms, with twisters and winders, to turn out 80,000 yards per annum? Anything from 35 upwards of white men.

Q. 11. What could you afford to pay white men? At home, spinning and all the weaving except the finishing is done by women, so much per yard, the spinning so much per week, the weaving so much per ell. It varies considerably from 15s. to 10s. for girls in the spinning department.

Q. 12. Do you think if we went in for spinning and weaving it would require to be done on factory principles? Yes; I do not think it would do as a cottage industry.

Q. 13. What is the process of finishing? The cloth is woven, washed, and milled. We make it broader, and then it is shrunk into a given width, then dried and brushed. Then a surface is made by passing it through machines we call "yankers," sort of revolving knives, which cut off all the long hairs. From there it goes to the press. You would require machines for all these processes. The question of making it pay resolve itself into how much the expenses are. Suppose a man gets £10 a month for looking after £10,000 worth of machinery, double that amount of machinery and give him £15 a month. You are turning out twice the quantity of work, but at less than double the expense. The expenses must be covered by so many yards per day. It costs more proportionately with smaller plant.

Q. 14. Do you know the difference between the cost price of production here and the cost price of imported cloths? I do not know what imported cloth is sold at here. I had nothing to do with the sale of the cloth. They used to sell it at 3s. 6d. I know some of the cloth could not be bought for that price at home. The quality of the wool is so much better here. We have not the same means here of adulterating the qualities of the wool. At home they very often make use of what they call "shoddy." It is old cloth exposed to the sun to rot, then torn to shreds, and re-spun with the wool. You can sell this at 2s. 6d.. Fine black cloth could not be made without "shoddy."

(Mr. Reyburn left with the Secretary, papers giving his idea of cost of building factory, and other details.)

The difference between the worsted and the woollen trade is this, that in the woollen trade the fibres are mixed up anyhow, but in the worsted trade the wools go through combs and come through all straightened out. The combs take out the short wools, and leave only the long wool. You require special plant for the worsted trade, and if you have this, then you want plant to use up the short wool which has been combed out. It would be a loss to put in worsted plant

only. It is a much more expensive plant. I could make cloth in Newcastle for about 1s. 11d. per yard and sell it at 3s. 6d., with the machinery we had. With the machinery I have mentioned you could get a fairly decent quality of cloth. You could easily compete with what is known as "one and one" stuff, sent from home. That means a good thread of wool going one way and a bad thread across it. The more up-to-date the plant is, the more you would produce, and the cheaper you could sell it. In cleaning the wool it is most important to take out all the oil. If any of the oil is left in it, it will never dye properly, and the colours will fade before the stuff is worn out. These figures were made out in connection with a proposal to start a factory at Harrismith before the war. I had some others, but just managed to save these. There was a proposal from the then Free State Government to assist in this, and it was in connection with this the figures were brought out.

Q. 15. Do you know how they proposed to start it? They proposed to give a bonus. This company was going to put up a factory in Harrismith. I think the bonus offered was £10,000. I think it was 10,000 yards, to be produced before any bonus was given, and a certain number of blankets with that.

Q. 16. Do you think that the place where the factory ought to be started should be a place with plenty of water and coal? There must be good water, and plenty of coal. The machinery must be driven by steam power. Oil engines are not steady enough, besides, they are terribly expensive. There is one working at a match factory near our place, and it costs £1 a day. There is no cheaper motive power than steam, and if you can get a plentiful supply of coal at a reasonable price it is much the best.

MR. MEIRING:—There is plenty of water at Parys, and the coal is not further than 18 miles away.

MR. REYBURN:—At Newcastle the coal was only half a mile away; the mill was driven by water. We had a boiler for dyeing purposes.

MR. LEVISEUR:—Nut coal is 18s. 6d. a ton here, loaded into trucks at pit mouth is 8s. to 7s. 6d.

MR. REYBURN:—The coals just now at the factory cost 23s. a ton, £9 10s. a waggon. As to the weight of cloth, three-quarters of a lb. to the yard is the average. Blankets are very easily turned out. The long wool would do for these? Yes; wool two inches long would do very well. The cross breds are much the best. They always bring a much better price. It is a higher class of wool. New Zealand or Australian cross breds are always in demand, they make much prettier cloth, but the ordinary Cape wool makes a good cloth. I got some cross bred wool and made about 20 pieces, which sold very well indeed. In making blankets, the spinning ad weaving is the same as for cloth, but you want special carding machines. With two different carding machines and the same loom, you could run the two branches together very well. I do not expect you would attempt the ordinary English blanket. You have not the wool here for the purpose. You would also require special preparing machiney. That is quite a different branch.

EVIDENCE OF MR. O'SHAUGHNESSY AS TO STARTING A WOOLLEN FACTORY.—26th August, 1904.

A letter from Mr. O'Shaughnessy to the Industrial Commission containing proposals with regard to starting a blanket factory, was read, and the Chairman explained that delay in dealing with this letter had been caused through difficulty in getting the members of the Commission together, and that at present all that could be said was, that his proposals would be recommended to the Government.

Q. 1. Will you confine it strictly to blankets? Yes, to begin with; we might ultimately go into other branches.

Q. 2. Can you get the class of wool for blankets? Yes.

Q. 3. You are sure of that? Yes; the only thing would be to know what the Government would be prepared to do in the way of granting free land for the purpose of building in a suitable locality. Harrismith, I rather think, would be a very good place indeed; we want to be in touch with the railway line and close to town, from which you can draw labour. I presume the soldiers' daughters and wives at a station like Harrismith, might be got for the purpose of working in the factory. At Harrismith the water is plentiful, and there is a siding to a large wool wash, which, I suppose, could be got at a fairly reasonable price. I presume it would be within the power of the Commission to recommend that a grant of land should be allotted. I would want a grant of 10 morgen, each set of buildings to cover one acre. We want to try and build an establishment for the employees to reside in.

Q. 4. Then you want a large drying ground for the wool? Yes; I do not think 10 morgen would be too much to ask, considering the industry.

Arranged that Mr. Meiring and Mr. O'Shaughnessy should meet at Harrismith to consult with Municipality there as to free grant of land and other facilities.

Q. 5. Our recommendation to the Government was a bonus of 6d. per blanket and 3d. per yard on the cloth, on a minimum production of 20,000 blankets per year, of so many lbs. weight. We calculated that althoungh a blanket was more than double the size of the tweed, the tweed would take better work, and if we gave 3d. a yard for that and 6d. per blanket, they would be about equivalent? 20,000 blankets would require a good deal of work the first year.

Q. 6. Do you know what the capital involved is? The machinery, to start, would cost £15,000. There would be buildings; I should say it woud take £20,000. I propose to produce 50,000 blankets per year. I don't think 6d. a blanket is sufficient inducement to anyone to start an industry. It would be a very risky matter indeed.

Q. 7. Supposing you borrowed money to buy your plant, the bonus would cover the interest on the money borrowed.

Q. 8. Is the bonus recommended for 3 years? Yes. At the rate of 6d. a blanket you would be earning £1,250 on an output of 50,000 per year.

Q. 9. What facilities will be granted for fetching machinery into the country? Machinery is free of duty.

Q. 10. In the way of railage? If you choose Harrismith, your railage would be through Natal.

Q. 11. Could your Commission recommend something to the Natal Government? No, I am afraid not. It would not cost much to get it to Harrismith; considerably less than to Bloemfontein.

Q. 12. Is it likely that on the recommendation of this Commission, the Harrismith Council would provide a site? Yes; I have no doubt of it. You might have to pay only a nominal charge. You must remember you would have protective duty too of 25 per cent. You would also have reduced fares for employees imported of 15 per cent. on first and second class tickets, and 20 per cent. on third class.

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APPENDIX I.

(A) REPORT OF MR. REYBURN ON NEWCASTLE WOOL FACTORY.

The following report is the result of investigations made during the past two weeks at your factory, in the hope that it may give your Board of Directors exact information and data to proceed upon in your deliberations on the future of the Company.

You will understand the report will deal with the wages question as it at present is in operation, and on that basis the amount of work that ought to be done. The power of the machinery is also touched on, and the result that should be produced in a given time. The various departments are mentioned separately, as being the most convenient and simplest to deal with.

DYEING AND SCOURING.—The staff in this department consists of three coolies, and is managed by Mr. Taylor. The amount of work that could be done with the present staff might easily be doubled. This, Mr. Taylor says, is easy of accomplishment.

The cost of this department per week is made up from the present pay sheet and amounts to, for the coolie:—

3 at 12s. per week	£1	16 0
Mr. Taylor (proportion of wages)	1	10 0
	£3	6 0

CARDING, SPINNING AND TWISTING.—This department is under the superintendence of Mr. G. Kemp, and the staff consists of three coolies and one boy. The amount of production from these machines varies with the size of yarn to be spun. For instance, in spinning what we call 26 cut, the carding engines would do more than the present mule could overtake, on the other hand, when spinning 16 cut or low numbers, the mules would require to wait for the carding engines. Had the mule 50 more spindles, the spinning of finer yarns would be more equalised, but there is the other way of running the mules, say, 2 hours every night longer as well as the meal hour. The accumulations might be overtaken in that way. The same applies to the twisting frame.

In one week from 15th August to 22nd, there has been run through the first, second and third carding engine, 460 lbs. clean wool for 26 cut. The spinning mule took two days longer, but assuming the mule is run longer to keep up with the carding engine, we find that working 296 days at 8 hours per day, these machines should produce 22,800 lbs. of yarn. Making allowance for changing batches, cleaning machines, and various other contingencies at 10 per cent., the year's work would be 20,000 lbs. of finished yarn.

From January to December, 1897, according to the report, the spinning returns were 9,004 lbs., or a deficiency according to the above estimate of 10,996 lbs.

The cost of the department is as follows:—

Coolie wages	£2	8	0
R. S. Taylor	0	15	0
G. Kemp	1	0	0
	£4	3	0

This makes the cost of spinning 2¼ and a fraction per lb.

The cost of the batch referred to is worked out as under:—The wool lost fully 60 per cent. in scouring, and the price ran up accordingly.

460 lbs. clean wool at 1s. 3¾d.	£29	4	7
58 lbs. oil for carding process, 6d. ...	1	9	0
460 lbs. spinning, 2¼d.	4	15	10
Total	£35	9	5

As we generally count on having yarn for wool, I calculated on that footing, but at the conclusion of the spinning the following was the result: 486 lbs. of yarn. The gain, of course, is in the oil, but yarn is sold in the grease and buyers buy accordingly. The yarn has therefore cost 1s. 6d.; add 2d. for expenses, and it comes out at 1s. 8d. per lb.

WINDING, WEAVING AND PATTERNS.—The staff in this department is 5 coolie men and 4 boys, with Mr. Kemp in charge. Mr. Ross produces the patterns and is entirely responsible for them. The plant consists of 6 looms, and two winding machines.

The calculations shown are based on the rate the looms run at present, 45 picks per minute. A working day of 8 hours is 480 minutes, giving 21,600 picks per day. Averaging the shots per inch at 34, this yields 173 yards per day, or 106 yards each per week. Counting the six looms at 5, the output should be 532 yards per week, or a yearly production of 26,092 yards. Deduct a fifth for loss of time in changing webs, breakage, alterations and other causes, the net result for the year's work should be 20,874 yards.

The reports from January to December, 1897, show 11,093 yards as the product, or a deficiency of 9,781 yards from the foregoing estimate. The weekly production was 225 yards, as against 426 yards net calculation.

The cost of the department is as under:—

Coolies (men)	£3	8	0
Coolies (boys)	1	2	0
G. Kemp (proportion)	2	10	0
J. Ross	2	0	0
			£9 0 0

FINISHING, MILLING, SCOURING, DYEING, Etc.—The staff consists of Miss McIntosh, Mr. Bliss, Mr. Taylor, and a coolie. At present they could overtake all the work were the production equal to the estimate of 426 yards weekly, and without any additional help except, possibly, Miss McIntosh. (Her work depends entirely on how the cloth has been woven. If good, she get through quickly; if badly done, the reverse). The cost of the department is as noted:—

Mr. Bliss	£2	10	0
Mr. Taylor	0	5	0
Miss McIntosh	1	10	0
One coolie	0	17	0
			£5 2 0

The total cost per week of each department will be about £21 11s. per week.

Scouring and Dyeing	£3	6	0
Carding and Spinning	4	3	0
Weaving and Winding	9	0	0
Finishing	5	2	0
			£21 11 0

Working out the cost of manufacture at the net calculation of 426 yards and weekly wages at £22, we find that the money expended on wages amounts to nearly one shilling per yard. From this, you will understand that the cost of production per yard would be materially lessened were the number of yards increased. This can be accomplished in two ways; first, to cultivate patterns with fewer shots per inch, or the introduction of new machinery. The first is dependent on the taste of buyers and cannot much be counted upon. The second resolves itself into one of finance. From the calculations given, it is evident the salvation and future of the business lies in this direction. The question of markets for the goods requires to be considered, and should your Board feel confident that, given good patterns, cloth to suit purchasers, and at a reasonable price, the production could be sold, then the introduction of fresh machinery would be much simplified.

Fast looms of modern type, running 85 picks per minute, would produce 400 yards per week, or 20,000 yards per annum; deduct one-fifth as before and you have 16,000 yards net, or nearly double the present production. Suppose that this involved additional expense, say, £300, that is £6 per week, the cost per yard would be 9d. Proceeding further to calculate the result, we should find as under:—

36,874 yards, at 9d. per yard	£1382	15	6
At 12 oz. per yard, 27,655 lbs. yarn, 1s. 4d. per lb.	1843	16	8
Interest, depreciation, taxes, soap, oil, dyes, repairs, say	620	0	0
	£3846	12	2

Average the price of goods at 3s. per yard—

36,874 yards at 3s.	£5531	2 0
Charges as before	3846	2 0
Balance	£1685	0 0

Out of this balance would come expenses of management, the remainder being available for the purposes of the company.

I hope the methods I have adopted make clear the position at present, and give some indication of the means of improving the present state of affairs. I have not attempted to colour anything, but give what I apprehend as a fair statement, and a reasonable view. It will be for you to examine what has been stated, but I do think if this business is pushed on business lines, there is no fear of its success.

30th August, 1898. (Signed) JOHN REYBURN.

(B) REPORT OF MR. REYBURN ON THE NEWCASTLE WOOL FACTORY.

I beg to present you with the following statement relative to the working of the factory during the year ending 30th June, 1899.

The machinery has been kept in good working order and has been doing well, no hitch of any serious nature arising. The new loom, displacing two narrow looms, has given much satisfaction and is a decided improvement.

The spinning machinery has produced 16,819 lbs. of yarn against 15,170 the previous year. The looms have produced 20,574 yards, against 14,504 last year, an increase of 6,070 yards. These results have been accomplished in the regular working hours.

The expenses of production for the same period are as follows:—

Wages and Salary	£1,442	2 4
Wool	729	18 0
Chemicals	167	6 7
Sundries	38	16 7
Coals	24	14 0
	£2402	17 6

Against this, I have delivered goods to the value of £2,001 12s. 2d., and the stock at the factory is £394 14s. 4d., or a total of £2,396 6s. 6d., leaving a debit balance against the factory of £6 11s. for the year's work. Through scarcity of water during the dry weather and a land slip at the turbine, six weeks' work was lost, involving an absolute loss in unproductive wages of £171, so that the above statement should show a credit instead of a debit balance.

WOOL.—The stock of wool as at 30th June, 1898, stated in the ledger, was £1,102 6s. 10d. and received during the year '98-99, £221 7s. 6d., or a total of £1,323 14s. 4d.

On the 10th October I took stock of the wool and it stood then at £500. During July, August, September, there was used £129 18s.; from October to June, '99, I used £600. The stock on hand at 30th June, 1899, was £116 9s. 6d.; total, £246 7s. 6d. This shows a difference of £477 6s. 8d., which requires some explanation as to how the balance of £1,102 6s. 10d., carried from last year, was arrived at.

COAL.—Ledger Account shows £37 19s., but £13 5s. of this total belongs to the previous year's account, and therefore should not be debited against this year's working at the factory.

CHEMICALS.—The Ledger Account shows £389 5s., but the sum of £25 12s. 10d. belongs to the previous year's account. The stock on hand at 30th June, 1899, is £147 17s. 7d., showing that the Dyeing Department has used £241 7s. 5d. to dye 13,866 lbs. of wool, which is absurd, or 4½d. per lb. for material alone—independently of wages. The stock of chemicals at 1st July, 1898, taken down at £100 0s. 10d., is worthless, and in the stock list, 30th June, 1899, I have noted a few of these items, and placed no value on them.

SUNDRIES.—The Ledger Account for June 30th, 1898, closes with a balance of £164 8s. 5d. and opens with £172 13s., showing a difference of £8 4s. 7d. Again, the sum of £26 17s. 9d. is debited to this account, which ought to have been in the previous year's account. During the year I have purchased sundries amounting to £38 16s. 7d., which mainly consists of soap and oil used in manufacturing. The total standing to this account is £239 15s., and deducting the sum I have procured £38 16s. 7d., leaves a balance of £200 18s. 5d. What this represents I cannot tell, but if soap, oil, paper, etc., are the items, these ought to be included in the costs and cannot be brought forward as a balance being used up in manufacture.

The balances stated above, summarised, are as follows:—

Wool Account	£477	6	8
Coal	13	5	0
Chemicals	100	0	10
Sundries	200	18	5
	£791	10	11

The debit balance against the factory in the balance sheet is £826 13s.

APPENDIX II.

EXTRACT FROM REPORT OF SPECIAL COMMITTEE OF HARRISMITH CHAMBER OF COMMERCE

RE INDUSTRIES.

Your Committee have been in communication with several people regarding the establishment of industries in the District, and now recommend the following:—

1. WOOLLEN FACTORY.—Your Committee placed themselves in communication with those connected with the Newcastle (Natal) Woollen Factory, and although the encouragement received from that quarter is not calculated to inspire confidence in a similar venture here, they are strongly inclined to recommend the establishment of a Woollen Factory in this District. Their principal reason for making such a recommendation is, that locally-made tweeds find a good market, and although such an undertaking may not have been successful elsewhere, i.e., in Natal, they are of opinion that with judicious management, there is no reason why it should not be made a success here. If, therefore, the Government would be agreeable to subsidize the undertaking, they feel justified in making a strong recommendation in this matter.

During the period from June, 1902, to June, 1903, 1,851 tons of wool and mohair were despatched from this station.

With regard to labour, it is possible, with a large permanent garrison stationed here, that sufficient labour would be available among the families of married soldiers.

LEATHER.

EVIDENCE OF MR. ARTHUR ROBERTS.—March 10th, 1904.

Q. 1. What is your full name, please? Arthur Roberts.

Q. 2. What is your occupation? I am manager of a tannery for Middlemore, Limited, Kingwilliamstown, South Africa.

Q. 3. In Kingwilliamstown? Yes.

Q. 4. How long have you been with them? 2½ years. I was 3 years in Cape Town with J. Sanderson, Tanner and Currier.

Q. 5. Did you learn tanning here or at home? At home.

Q. 6. You will be able to compare the two—home and local? Oh, yes.

Q. 7. What sort of work do you do? Every kind of tanning; I have some samples with me. We tan and dress leather, upper leather, book-binding, upholstery, &c.

Q. 8. Do you do any chemical tanning? We use combinations in tanning; oils, chemicals, alum and various other tannages, such as Helvetia leather, which is generally used for belt laces. We make this in any colour to suit the buyer.

Q. 9. How many men do you employ? Up to the last three months we had about from 300 to 400 hands—at the present time we have 190.

Q. 10. Could you give us any idea of the number of skins and hides that you treat say, in a week? Until just recently we have been going through 130 a week—that is the large hides, not including small skins.

Q. 11. Where do you get your skins? From Johannesburg. The hides we get in the neighbourhood are badly damaged by ticks—especially the belly part. At the same time they are very badly grown, in some parts they are quite half an inch thick, in other parts they are nearly as thin as paper. The local hides might do very well for sole leather, but are unfit for fancy leather, as most of them are eaten right through by ticks.

Q. 12. What process do you use; do you use all one bark? We use chiefly the wattle bark. We get a lot from Fort Cunningham and from Natal.

Q. 13. Do you use South African bark? Yes, certainly, we do not import bark. We had a Managing Director who used mostly all thorn bark, but the thorn bark dried up to almost half its weight, and only contains about 10 per cent. Tannin. The wattle bark has 35 per cent. tannin, so that though it costs more, it is cheaper in the end, and altogether quite superior.

Q. 14. You cannot buy Mimosa bark dried? Very seldom. The first result you have from wattle bark is a liquor of 35 per cent. Barkometer, the next of about 25 per cent. and then several other liquors of various strength from 15 per cent. Barkometer downwards. We turn out white kid as well as bark-dressed leather. At the last Kingwilliamstown Show we took 12 first prizes out of 13 for saddles, harness, boots, leather, etc., shown by us and manufactured at our works.

Mr. Arthur Roberts—[LEATHER.]

Q. 15. Do you make ordinary alum leather? Oh, yes; white and brown.

Q. 16. How does your leather compare with imported leather? Most of the people won't believe it is Colonial made. I think it is equally as good. Most of the Tanneries in the country have failed for the reason that they do not put thoroughly skilled men in charge. You must have skilled workmen. Once the hides have been improperly treated in the limeyard, it is an utter impossibility to make good leather of it afterwards. The liming process is a very delicate part of the business. You must have an experienced man who can judge properly the length of time and the strength of liquors to use, as it is possible for an inexperienced man to put hides through, which, when finished, would lose from 2 to 3 pounds in weight, whereas by proper treatment it is possible to gain 2 or 3 pounds.

Q. 17. You strengthen the liquor as the time goes on? For a man to be successful he must pay great attention to the hides while in this process, in fact, he must watch them as a mother watches her new-born child. You strengthen the liquor from time to time, and gradually, and the hides are moved every other day to a stronger liquor until tanned sufficiently. As regards bateing, pureing or deliming, in cold climates it takes from 6 to 12 days; in this country the hides are generally put into this process for a matter of 24 hours, owing to the difference of temperature.

Q. 18. What is your process of tanning—from the time you get the hide? First, they are weighed, then we give them a stock number stamped on the hide. Then soaked in clean water. Then next morning they are cut down and put into what we call a "drum." Some people call it a mill; it is a machine with large revolving wheels, which thoroughly cleanse the skins. From there they are put into the limes.

Q. 19. How long do you keep them in the limes? For sole leather, until the hair removes easily—for example, 5 or 6 days. In sole leather, you leave as much of the albumen as possible if you wish to produce a good firm leather. For alum leather the hides require much longer liming than sole leather.

Q. 20. From the lime then, it goes straight to the pits? The superfluous fat is shaved off, and the roots of the hair thoroughly scraped out. Then, from there we run them into a bath of acid, to take the lime from them. From there they go to be coloured and tanned.

Q. 21. How long do you leave it in the liquor for sole leather? You could turn out sole leather from any time from one month upwards. A good high-class leather should be in tan at least seven months. If a man wants to run a tannery successfully, he must put in his hides regularly week by week, the same amount in as he works out. When sole leather comes out it is washed, oiled and rolled. We use whale oil and various other kinds.

Q. 22. Which adds to the weight? The oil adds very little to the weight as so little is used on sole leather. With upper leather, when it leaves the lime, it is put into a fermentation of bran and water to take out the lime. This brings it down as soft as possible.

Q. 23. How long is it in that? Oh, it just depends. That is where the whole pack would go rotten in five minutes; you have to watch it all the time; it might take 24 hours.

Q. 24. What is the length of time for tanning sheepskin? They can be tanned in about 4 hours, but we generally give them three to four weeks, including liming, tanning and dressing. Some firms are in the habit of splitting them after they have been well limed, especially in factories where they are making chamois leather.

Q. 25. The ordinary veldtschoen is made from the split? The very common veldtschoen is made from split, the most of the imported ones containing compo, cardboard, &c. We are making about 2,000 pairs per week, and guarantee that they are all good leather, no cardboard used.

Q. 26. Can you tell us the price you pay for hides? Well, we generally pay in Johannesburg about 7¼d. a lb.—we have paid as much as 7½d. or 8d. We get all our sheepskin from Cape Town. We use fat tailed sheep—they make splendid leather.

Q. 27. You buy them with the wool? Yes, certainly. The wool from the Cape sheep is of very little value. We also get our good skins from the Western Province, for which we pay 1s. per lb.—dry salted. For sheep skin we pay 2s. 6d. each, but I can demand very often as much as 7s. per sheep skin when finished. For the goat skin we get 12s. to 15s. per skin. We buy by the lb., and sell by the skin.

Q. 28. Have you tanned any buck-skin? I have tanned a few Springbuck.

Q. 29. How do you produce the grain—with rollers? With embossing rollers.

(Shows samples of different skins all completely prepared and finished.) According to Proctor, if a man were to plant 100 acres of wattle, taking in all expense, in eight years he should make £2,000 profit.

Q 30. How long have you been in this country? 10 years.

Q 31. Do you employ mostly white labour? No, not many white men.

Q. 32. Are your samples all tanned at your tannery? Yes; tanned and dressed.

Q 33. You require a certain number of skilled tanners, I suppose? Oh, certainly.

Q. 34. What percentage of unskilled labour can you use? I think about 50 per cent. An experienced tanner gets from £3 per week upwards. This does not mean a man that takes charge of any other labourers.

Q 35 (a). Is the plant expensive? The most expensive things are the pits. I have tried both concrete and wood, and consider wood the better. The wood improves with keeping, provided they are looked after. I have myself seen pits in fairly good order that have been in use for over a century, and have read of them in use between two and three centuries.

Q. 35. (b) Could you give us a rough idea what would be the cost to start a small establishment, perhaps to work 25 hides a week, or say 50? You want, say, 10 pits, costing not less than £10 each; tables, £15; Splitting machine, £310 down to £175 (shows price list); sole leather roller, £100; Glazing machine, £54; rollers, £20. If I was going to get machinery I would try and buy it in the

Mr. Arthur Roberts—[LEATHER.]

country, as I know different tanners who have shut down, and no doubt would be glad to sell their machines. (Shows list of materials necessary, which would need to be imported).

Q. 36. What do you use Palm Oil for? We use it for softening the grain of the leather: It is possible to do without it. We could use Colonial tallow or Whale Oil in the place of Palm Oil. Linseed Oil is necessary for some kind of upper leathers.

Q. 37. Would this plant need to be under cover? Oh, yes; the pits would need to be under cover too. Then you must have an engine. Yes, 12 H.P. would do. You would also want a large drum (shows illustration of drums).

Q. 38. Must the water have any special quality? For sole leather, hard water is quite good enough, but I prefer a nice soft water for upper leather, but in many cases we have to take what we can get. If we require the water soft we make it so by the aid of chemicals.

Q. 39. Would the climate suit here as well as in Kingwilliamstown? I think it would suit here, if anything, better than Kingwilliamstown. It is far better to work hides in for sole leather during the winter months when the water is cold, as you obtain better results. (Shows specimen of sole leather).

Q. 40. How long has the Middlemore Tannery been going? 2½ years. (Shows specimens of Goat Skins used for covering chairs.)

Mr. Fichardt has some of my skins to cover his furniture.

Q. 41. Do you import any leather? Very little. (Shows specimen of Cape Sheep Leather.)

Q. 42. The Tannery is profitable? Oh, yes; we are showing huge profits, so would boot and shoe factories if they had all practical men.

Q. 43. Can they compete with imported goods? Yes. We have about £18,000 worth of machinery at work in Kingwilliamstown. At home many a girl can make a pair of hand-sewn boots as well as a man.

Q. 44. There is a good deal of work that can be done by women? Oh, yes; a lot. I think there are plenty of hides in the country. I have been selecting hides down at East London and gone through a pack of 5,000 at a time.

Q. 45. Were these all from up-country? I don't know where they came from, but most probably from the Transkei District.

Q. 46. About the currying; when does that come in? They are washed and half-dried and then split, scoured, and then what we term "set."

Q. 47. What is the "setting" process? They are laid out on a table and all the wrinkles taken out, and finished in the usual way. Staining is done either by dyeing or with a brush, but dyeing gives a better result.

Q. 48. Do you think you could make leather here just as well as in England? Perfectly sure of it.

Q. 49. How does the cost compare? I suppose English leather makes the market? Yes.

Q. 50. Do they make more profit out of it than you do? Oh, no, not as much. They have heavier expenses, rental, importing tanning materials, etc. They have to import hides; besides, it takes them much longer to tan than it takes us.

Q. 51. You use a great deal of water in a tannery? Oh, yes; it depends on the number of hides. Turning out, say, 50 a week, you would want about four pits 4 feet x 5 feet. You would want about 2,500 gallons a day.

Q. 52. What wage do you pay for unskilled labour? 5s. per day.

Q. 53. Skilled labour? From £3 a week up. I am told Kroonstad is a splendid place for tanning.

Q. 54. Who told you, may I ask? A friend of mine who was going round the country and thinking of going in for the thing.

Q. 55. Supposing the Government were prepared to assist in starting a tannery, what would be the best way in which it could give help? For instance, one way suggested was by giving a bonus to encourage the production. I am afraid I could not tell you; I have not thought of that.

EVIDENCE OF MR. ERNEST JOSEPH CANE.—10th March, 1904.

Q. 1. What is your full name? Ernest Joseph Cane.

Q. 2. Your occupation? Fellmonger and Wool-scourer.

Q. 3. You are not a tanner at all? A Fellmonger is a tanner of light leather, such as sheep skins, goat skins, calf skins and other thin hides. Fellmongering is the process of loosening the wool or hair from the skins, by dissolving the hair sheaths which are embedded in the skin, by a sweating process, by a mop-liming and flooding process, or by a Sodium Sulphide and Lime process; after the wool or hair is taken off, the skins are tanned so as to produce light leather.

Q. 4. You have never done any tanning of hides? Well, no; but it is the same process exactly as the sheepskin. The duration of time of tanning hides being longer than skins, on account of the thickness of the hides, chemicals and other ingredients, being usually used to force the tanning of the hides.

Q. 5. Where were you employed? With J. Dale & Co., Melbourne.

Q. 6. What lines did they go in for? Wool-scouring and Fell-mongering.

Q. 7. Was it for selling to the Home Country? Yes.

Q. 8. What material did you use in tanning? Wattle Bark.

Q. 9. That, I suppose, you got in Australia.

Q. 10. Have you had any experience in this Country? No, none whatever. I have had no experience in working here.

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Q. 11. Did you use only the one bark? Yes; it was a very light tannage. The idea was to tan the pelt into Basil, so that the leather manufacturer might use it for making any class of leather he liked to manufacture.

Q. 12. Did you sell to the local manufacturers? Very little; it was mostly all for export, there was no market for it in the Colony.

Q. 13. Where was your principal market? London, and other English markets.

Q. 14. Could you always dispose of all your work? Yes; we found it more profitable to send to London than to sell to the local manufacturers.

Q. 15. You got better prices? If a local factory asked for the Basils, we always gave them the lower qualities.

Q. 16. Do you tan skins with the wool on? No; the sheepskins are only tanned with the wool on, when they are required for wool mat-making, which is usually done by the Wool Mat Manufacturer, by tanning the skins (pelts) with alum and salt.

Q. 17. You make a good profit out of the wool? Oh, yes, of course; we work the industry so as to get profit out of the pelt as well.

Q. 18. Did you do any manufacturing from the leather you made yourselves? No; it was purely a light tannage for the London manufacturers; mostly all the tannage in Australia is done in the same way for export.

Q. 19. The leather you use in the country is that re-imported? Only in the shape of goods, only in the manufactured article.

Q. 20. Are there not a great many manufacturers of boots in Australia? Yes; but in 1902 the imports of boots into Australia from American manufacturers amounted to £209,078. America, going in for specialities, can manufacture at a lower cost, at the same time producing a better article. There are very few factories in America that make all classes of boots, such as for men, women, or children. A manufacturer gets into one line and makes that kind of boot alone, one firm making nothing but highly finished ladies' boots, another firm a low walking shoe for ladies, and so on, each firm specialising on one particular kind of boot or shoe; by so doing, they can make improvements in their machinery, and lower the cost of production, at the same time giving the operatives better wages. It is on this account that America is enabled to place their boots and shoes on the Australian market in large quantities, although in opposition to a high protective tariff.

Q. 21. Do you send the raw material to America? In one case we sent the pelts as pickled roans in casks—that is, the salted pelts, but found it a loss, and never tried it again. We always send the Basil to the London markets.

Q. 22. About the tanning material; you use one kind only? Yes; it is purely a light tannage.

Q. 23. You simply went the length of the first tannage of the skin? Yes; what might really be called the preserving of the skin.

Q. 24. What about the price of the wattle bark? I could not quote at present.

Q. 25. Roughly will do? We usually got our bark in the Spring. The farmers bring it in to the tanners and at that time it usually runs about £6 or £6 10s. per ton, according to the quality. I am speaking of three years ago; I could not say for the present.

Q. 26. I suppose you had grinding mills? Yes, if you want a good quality of leather you must do your own grinding; there should be 25 to 40 per cent. Tannin in the bark.

Q 27. Do you think wattle is as good as oak? Yes; they are quite satisfied with our tanning in the London market. We generally get the best price for it. Oak and wattle have about the same per centage of Tannin—if the oak is old you might get a better percentage.

Q 28. Do you do any chemical tanning? No; our firm preferred to use the pure bark unless in a special case, when they could use their own chemicals.

Q. 29. What fat did you use? Fat?

Q. 30. Did you not use any? No; that applies more to currying and the dressing of leather, quite distinct from tanning. Any dressed (tabled) leather we sold to the local dealers as far as I remember. We never sent any dressed leather to London. We could not compete with the London markets in that line. Our machinery was not quite up to date.

Q. 31. Did you grow your own bark for the tannery? No, we never did. We found we could rely on the farmers.

Q. 32. Did you test the bark before buying a large quantity? Yes; we usually quoted him a price on the percentage of Tannin. We bought from the same farmers every season. We gave a good price and did not touch the market at all. We preferred to get it this way, knowing the District in which the bark was grown.

Q. 33. Did you pay on actual results or on samples? If we tried a new man, we usually asked him to send a sample first.

Q. 34. I see you have a lot of papers there; have you got any statistics on leather? No; I thought perhaps you might want to know something about wool-scouring.

Q. 35. If you have any suggestions we shall be glad to hear them. Whilst in Port Elizabeth I noticed the condition in which the farmer's products were placed on the market; entirely different from what the farmers do in Australia. In Australia the Wool and Produce Brokers send out their representatives throughout the country to canvas the farmers, so that they will forward their consignments of produce to their respective firms, at the same time showing the farmer the latest methods of getting up his products for market (wool, hides, sheep-skins and tallow), so that it will receive the highest value when placed before the buyers. The various consignments, upon arrival at the brokers' warehouses, are sorted and classified according to the respective qualities; the goods are displayed so that they will realise the highest commercial value. The brokers are recompensed by the commission obtained on the prices the produce realizes, the farmer receiving a better market value than otherwise he would get if he did not take any care of his produce, or if he disposed of them to a dealer, &c.

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Hides and Sheepskins, &c., should be flayed off the carcase of the animal while the carcase is still warm, coming off easier and doing away with the necessity of using a knife, as when knives are used they make an uneven surface on the hides or skin. They should be free of all cuts and very little flesh or fat left on them, and kept as clean as possible, especially the sheep-skin; the skin buyers always give a better price for a well-cared-for skin, as all dirt and foreign matter adds to the weight and working. The methods usually adapted in Australia are as follows:—The sheep-skin, after being taken off the carcase of the sheep, is spread out on a clean place (on grass, fence, or a line), in the sun, the skin to be well stretched and the edges not allowed to curl up, especially the head, so that it can be thoroughly dried; when a crust has been formed, finish drying in the shade (a shed), on a wire or beam, or better, a galvanized wire with two wires six inches below, and six inches apart, so that the skins will be opened out, and allow a current of air to pass through, the skin to be put on the wires pelt up first and turned over, so that the wool side will dry. The trotters should not be cut off until the skin is nearly dry, as they help to stretch and keep the skin in a good shape, the buyers like a well-stretched, shapely, and clean skin. Skins should be folded as little as possible in the packing, made into bundles or bales, all packed the one way, with the wool outside. Hides, as soon as taken off the carcase of the ox, should be trimmed by cutting off the knee and hind shanks from the hocks, also the head, ears, and face pieces, leaving the cheeks only.

Lay the hides flat one on top of the other, butt to butt, on a clean floor slightly sloping, to allow the brine to drain, as laid down they should receive from 10 to 12 lbs. salt each (coarse), and be left in salt fully 8 days before being taken up; shake out the surplus sal and sweep the hides before rolling up for market. The salting varies according to size and thickness and is spread evenly over, the butt part receiving the most. If the hides are not properly salted they become slippery and loose-haired, causing them to be sold as faulty, losing ½d. to 1d. per lb.; cleanliness is greatly required on the flesh side. When folding, the flesh side to be inside, throw the head towards the tail; the fold starting from the wither, the sides to be thrown in—meeting at the centre of the hide, and then rolled tightly from the head and tied with two pieces of strong lashing at each end.

Q. 36. You are speaking of the wool with the pelt? Of the sheep-skin with the wool; he gets a profit out of the wool and he also gets a profit out of the pelt when tanned.

Q. 37. Wool brokers in Australia are in a very large way, I suppose? Yes. The companies that trade as Wool and Produce Brokers, Stock and Station Agents, Mortgage and Agency Companies, have large warehouses and show-rooms for receiving all kinds of station and farmers' produce, such as wool, grain, hides, sheep-skins, tallow, bark, furred and other native skins and leather, selling the same by auction weekly. They act strictly as selling brokers, the proceeds of all consignments are held in special Trust Accounts with the leading banks, pending payments to owners. Liberal cash advances are made on ensuing wool clips and crops, and on all consignments of produce received for sale or shipment, also on station and farming properties and live stock.

Free storage is allowed on grain for three months received before 31st March, one month allowed after that date, a small charge being made on other commodities after one month.

The Brokers have a fixed rate of charges, warehousing commission, receiving and delivery charges, being arranged by the Wool Brokers' Association. The buyers have also an Association, which is created to protect their interests. All classes of produce are fully displayed and carefully valued prior to the sales, each class of produce having a show-room or store set apart for its own particular requirements.

Q. 38. What does the Government do in assisting in that way? I could not say, except, perhaps, allowing low railage; that is the only help they give.

Q. 39. They don't send anybody about to help the farmers as the brokers do? No; the brokers really canvas for trade, but at the same time it is an advantage to the farmer as well as to the industries, as the farmers, having only a few skins, hides, or other produce, do not think it worth while to take care of them. I have seen large quantities of sheep-skins, hides, bones, horns and other produce strewn about on the veldt, which, if properly cared for at the right time, would be of great monetary consideration to the farmer, and if the system were adopted in South Africa as is done in Australia, of sending out qualified men into the country to show the farmer how to take care and prepare his produce for market, the result would not only be beneficial to the farmer, but greatly add to the export trade, helping to build up and keep going many industries which cannot do so owing to the shortage of raw material, as all industries pertaining to the working up of raw material require to be kept constantly going to be a success.

Q. 40. Do the Agricultural Department do anything in that way? No; they go in more for assisting pastoral and agricultural farming.

Q. 41. Have you any other information you can give us on the same lines? Tallow is another line. Care should be taken when putting up tallow to see that no water gets into the pipes, casks or tins. Colour, evenness, and body are essentials for the satifactory realisation of consignments; tallow with the above qualities will always fetch top prices. Adulteration is quickly detected, such as water and impurities; it is best sent to market in pipes containing 7 to 8 cwt., or in casks, as then they have the advantage of both the shipping and manufacturing competition. Tallow in tins, cases and broken packages never realises within 40s. as much as those in shipping condition. For trade purposes, tallow is best made up as follows:—Pipes containing 7 to 10 cwts. (1,120 lbs.), hogsheads containing 4 1-3 cwts. (54 gallons at 9 lbs. to a gallon), quarter oil casks, 378 lbs., brandy casks, 297 lbs. The tallow is poured in hot and as it shrinks in cooling, the pipes, &c., required to be filled up several times, and when the material is cooled the pipes, &c., are headed up.

Q. 42. In what form do they sell the tallow? What does it pay the farmer to do before sending it through the Brokers? He can either send the crude fat to the market or he can boil it down.

Q. 43. Does it pay him to boil it down? Oh, yes; in anything where there is some labour expended a better price can be got. Take the beef fat, for instance; if it was simply thrown aside into a tin, it would be treated merely as oddments, but if it is boiled down and rendered in cool weather, he could keep it for 3 to 6 months.

Q. 44. They simply boil it down in large caldrons? Yes. Mutton Tallows and Beef Tallows should be kept separate.

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Q. 45. After it is boiled down it is put into tins? Yes; pipes, oil quarter casks, brandy casks and hogsheads preferably.

Q. 46. Is there not a danger of it running and melting? Well, there is always the risk through unskilful handling and filling of the casks, etc. When it is treated in the proper way, a better price can always be got for it.

Q. 47. Is it an easy thing to handle? Oh, yes.

Q. 48. What price do you get for tallow in large quantities? In London in December our quotation was, I think, between 27s. and 29s. per cwt.; I have seen it 30s. to 33s. I am quoting Mutton Tallow.

Q. 49. In Australia, then, you cut out the fat because you can get a better price for it than the meat? The exporters of frozen meat in Australia, Argentine and South America, to the South African markets, have lately been cutting off most of the fat on the meat exported to South Africa owing to the high prices ruling for tallow in London markets, and chiefly because the importers of frozen meat in South Africa object to the fat being left to the carcases and charged for, whilst they get no return and have no sale.

Q. 49 (a). Is there any other information you can give us? Of course, at the present time in this country there is not much sheep-killing, but the way in which the sheep-skins are got up is nothing compared to Australia. We treat them quite differently; we take better care of them.

Q. 50. You think the farmer could improve his price? Oh, yes; if he took more trouble. It is the same with hides.

Q. 51. Do you think a tanner would get better weight out of a sun-dried hide than out of a salt one? Yes; because he would buy it at a lesser price. A sun-dried hide will increase during tanning. In Australia the tanners and foreign buyers usually discard the sun-dried hides, treating them as an inferior quality; by drying the hide in the sun the grease soaks into the hide, entailing a greater amount of labour in manufacturing it into leather, with a liability of the hide cracking the grain when folded for shipment; by salting the hides they are kept in a state of preservation. The yield of leather of a sun-dried hide would be about the same as a salted one, but would cost a trifle more in working up, with the additional risk of the former turning out the inferior quality of leather, as it is more difficult to detect deficiencies in them than in salted ones.

Q. 52. A salted hide loses? Well, I would not say it loses. In Australia we look always to the farmers' side, we do not look at the man who is going to buy. The farmer has to be studied first.

Q. 53. The more a farmer does, the less a tanner will have to do? Yes; it pays the farmer to do it.

Q. 54. They use very rough salt, I suppose? Yes.

Q. 55. You think that the farmer could get a better price if he took more trouble with the sheep-skin and hide? Oh, yes; I am certain of it. In some of the wool of South Africa I have noticed all sorts of rubbish, there is no care taken with it. In Australia you never see any dirt or rubbish in the wool; I have

seen it here in all sorts of conditions. They get fully 55 per cent. less than they get in Australia. You see, in Australia, the farmer sends his wool to a broker who, if he wants to get his commission, will see that he does not get a lot of rubbish.

Q. 56. But it is not sold without inspection? Oh, no; it is all inspected. The farmer has got to guarantee his wool.

Q. 57. Is there anything else you could suggest that would improve the farmers' price? No; only I think he should be shown how to get up his commodities, especially his wool.

Q. 58, 59. In connection with your preparation of the skins, will you tell us shortly your process? The sheep-skin, if in a dried state (usually country consignments), are soaked in a large pit or cistern of water for two or three days until fairly soft, the skins being spread out flat in the pits, and weighted down with planks to prevent the grain in the pelts cracking; when soft, they are taken out and given two or three rinsings to insure that the skins (wool and pelt) are free from all dirt or foul matter; the skins are allowed to drain and are then put through a wringing machine to squeeze out all dirty water, and put through a rinsing machine, with strong sprays of water running behind the rollers, the rollers acting as a wringer, which squeezes out all the dirty water as the wooled sheep-skins are drawn through, the sprays of water playing on the skin as it comes through the rollers, the rollers being reversible. The skins are again taken through the rollers as they are withdrawn. The wool on the skin by this operation is freed of all foreign matter. They are then run through the burring machine to take out any burr or grass seed that may be in the wool. From the burring machine the skins are taken and hung up in the sweating houses. The sweating houses are usually built underground, a basement floor would also answer the purpose, the object being to keep the houses as damp and air-tight as possible, no artificial heat being required. The skins are first hung up from the foreshanks upon tinned tenter hooks, driven in rails, then changed to the hindshanks, after about half the time occupied in sweating. The time taken to complete the sweating is from 3 to 6 days in hot weather; in winter 6 to 8 days. The wool is loosened by allowing Bacteria to create, producing a liquid which destroys the hair sheaths, care should be taken that the pelt is not affected. The skins, when treated, are handed over to the Wool Pullers (sorters), the pulling or sorting is done by skilled labour, as on the sorting the value of the wool depends. The "pullers" sort the wool into various grades into baskets kept for the purpose, and carefully inspected by an overseer. The wool is put through the scouring and washing machine, and then on the flats or yards to dry in its various qualities. The skins (pelts), when pulled of all wool, are put through and paddled in water, taken out and broken over on the beam by the "Fleshers" to remove the pieces of fat or offal, also to break the reins to allow the lime better to penetrate the skin previous to being put in the lime pits, then washed in a weak lime liquor, taken out and given to the "Scudders" to remove any kemp or short wool from the grain side of the pelt, rinsed, and then handed to the "Fleshers" again to be pieced and dressed to a shapely condition. They are again put into the lime pits of three or four different strengths, being transferred daily from the weaker to a stronger solution. The object of liming is to kill the grease that is in the pelts. From the lime pits they are well rinsed in clean water, a paddle wheel being used to keep the water in motion, so that any lime that may remain in the grain of the pelts is entirely removed; they are then put into a vat of weak sulphuric acid, 1 to 1,000 parts, to swell the cells, distend

the pores, thereby favouring the absorption of the tannin, the acid also helps to preserve the pelt. The pelts, when swelled, etc., are put into a pit of spent tan liquor, with a wheel to force the tannin well into the pelt; from the paddle wheel pit the pelts are transferred to pits with stronger solutions until fully tanned. The pits should be 6 to 8 feet deep, placed side by side, so that the pelts can be easily transferred from one pit to another of stronger solution. The skins (pelts), when tanned, are taken to a hanging loft, which is well ventilated with moveable louvres on all sides to creat a good draught of air to pass between the tanned pelts when hanging. In wet weather they would require putting in a drying kiln to finish off; when well dried, the Basils (pelts) are handed to the "Stretchers" to be put over the beam, to be stretched to make them supple, to take out all folds or creases that have been formed when drying, and to give them a good appearance. The Basils are then handed to the "Sorter," who make them up in their various sorts, such as Firsts, Seconds, Thirds; lambs: First Greasy and Second Greasy, and baled for shipment. They are then ready for the Leather Dresser or Currier. The dressing, our firm, Messrs. J. Dale & Co., Melbourne (of which Mr. J. F. Cane was Manager, myself being assistant, being nephews of the late Messrs. Dale), discarded, as the leather factors and buyers on the London market, preferred the Basil in the undressed state, and we found it more profitable to ship in that condition. The scraps and pieces cut off by the "Fleshers" are taken care of and put on wood ratlins to dry in the sun; when dried, they are either baled for shipment to London, or may be bought up locally by the manufacturers, the above are termed "scrolls." The spent bark can be used up in the boiler furnaces, or disposed of to market gardeners when decayed.

Q. 60. How long did you keep it in the pits? About 4 or 5 days.

Q. 61. Then it has to go through a further process when it goes home? Yes; that is left to the leather manufacturers. The Basils, when taken over by the leather manufacturers, are usually split up by a machine into three parts, the first, or grain side, for skiver, for book-bindings, hat and other linings, white leather, mock kid, for gloves, boots and shoes, and other purposes, the second, or middle part of the Basil, as chamois, vellum, soft white leather for coverings of bottles and other articles the third, or flesh side, for glue, etc.

Q. 62. You could make better prices doing that much of the tanning than for the raw material? Yes; of course there is the labour employed.

Q. 63. There is a great deal of work can be done by unskilled labour? Yes, practically all, but you would want skilled supervisers. In tanning you do not want a skilled labour, but in sorting wool it is entirely different, more care being required.

Q. 64. How many hands did you employ in the factory you were connected with? 150 to 170. We were turning out 17,000 to 19,000 sheep-skins a week.

Q. 65. Out of that number, how many were unskilled? I should say 75 per cent. fully. I suppose it is your opinion that a factory would only pay on a large scale? It would be very much better on a large scale, but you could do it on a small scale.

Q. 66. Could you give us any idea of the cost of the plant? I could not just now.

Q. 67. Do you require much plant? In the tanning of the pelts there is very little machinery. The following is a description of plant and machinery, etc., used at Messrs. J. Dale & Coy.'s premises:—

Fell-mongering, say for 17,000 sheep-skins per week, 1 Bark Mill, 4 Soaking Pits (large), 12 Tanning Pits, 2 Tanning Pits with paddles, 2 Rinsing Pits with paddles, 6 Liming Pits, 2 Sulphuric Wells (acid), 4 Pits for drenching Pelts, 6

Storing Pits for prepared Pelts, 12 Trees or beams for wool-pulling, Fleshing and Scudding: Quantity of Fleshing, Scudding, and Stretching Knives, Forks, Tanning Tongs and Sheep Shears.

Wool-scouring: 1 Wool-washing Machine of 3 Tanks, 1 Hydro Extractor, 1 Wringer, 2 Rinsing and Wringing Machines, combined (these are used for cleaning the pelts as well as the wool), 2 Burring Machines, 1 Willy for treating refuse and seedy wool, 1 Wool Press, 1 Leather Press, 1 Scroll Press (for baling and packing), 2 Cornish Boilers, 1 Horizontal Engine (20 H.P.), 1 Portable Boiler and Engine; these were used in connection with the tanning as well, but principally for the wool-scouring; 12 Wool Baskets, 2 Hessian Sheeting for drying wool.

Buildings: I large Wool Store with Bins, Pressing Room and Warehouse, 1 Drying Kiln for wool, 1 Scouring Room, 1 Sorting Room (above), 1 Pulling-Room with Sweating Room attached, 1 Leather Loft, I Drying Kiln for leather, 1 Leather Loft and Stretching Room combined, 1 large Bark Shed, 1 Liming Shed, 1 Scroll Shed, Ratlins for drying Scrolls. If a factory was constructed on the banks of a spruit of clean running water, it would greatly lessen the cost of construction.

Q 72. Your machinery was more for the wool? Yes. From experience we found that the buyers preferred the pelts brought to a light tannage, so that they could put it to any purpose they liked. They could bring it back to white leather if they wanted.

Q 73. I suppose there are tanners in Victoria who do the whole process? Well, there might be one, and even they did not do the whole process. They ship a terrible lot of stuff. They really cater more for the London markets. I don't think they ever send home any manufactured leather, not in the finished or dressed condition.

EVIDENCE OF MR. REISIG.—5th March, 1904.

Q. 1. Can you make as good leather as the Cape Town Tannery? Yes.

Q. 2. Can you make as good leather as English leather? Yes.

Q. 3. How many hides can you tan during the Winter? About 30 a week.

Q. 4. Can you tan hides in Summer? Yes, very well.

Q. 5. Can you tan hides for upper leather Summer and Winter? Yes.

Q. 6. What would be the cost of building a Tannery for tanning 3,000 hides a year? I could not say, I would require to calculate.

Q. 7. How many pits would you require for 3,000 hides? 50 pits (costing about £10 a pit, these to be 7½ feet long, 3 feet wide, and 5 feet deep). A wooden lining is better because it improves with the tanning.

Mr. Reisig—[LEATHER.]

Q. 8. What would be the cost of machinery, including Bucket Pump, Mill for grinding Bark, Leather Rollers, Cutting Machines, Tools, Mules? About £500.

Q. 9. For skins and labour and working capital for, say, four months? About £2,500. It would be four months before there could be any return.

Q. 10. Is Elandsboontje better for tanning than oak? Elandsboontje is the best tanning material I know—particularly for sole leather.

Q. 11. What is the price of Elandsboontje? I do not know. I hire Kaffirs to take it out; people are glad to get rid of it.

Q. 12. How many bags of Elandsboontje do you require for tanning one hide of 25 lbs.? I would require one bag of about 70 lbs. weight for a hide of 35 lbs.

Q. 13. How many white men would you require for a tannery as above? I would require two good practical experienced men, and about six blacks.

Q. 14. Can you prepare enamelled skins? Yes.

Q. 15. Can you prepare kips? Yes.

Q. 16. Can you prepare Alum leather? No.

Q. 17. Do you consider Alum leather as strong as tanned leather? It is not so good as tanned leather; it is not so strong.

Q. 18. What is the average price of:—
Sole leather? 1s. 6d.
Cow hide? Same price as Ox.
Calf? 2s. 6d.
Goat skin? I do not tan many.

(Mr. Leviseur explained that the price of Goat skin in Cape Town is 3s.)

Sheep skin? 3s. to 4s.

Q. 19. Do you make anything out of the wool? If I have a wool skin, the wool will pay for the skin.

Q. 20. What is the price per lb. of a wet hide? Out of a wet hide I get only half of what I get out of a dry hide. Wet hides would be about 2¾d. or 3d. A dry hide about 6d. Out of a salt dry hide I make two to three lbs. less. For these I pay 4d. to 4¼d. a lb. I get more out of a dry hide.

Q. 21. Can you make use of Mimosa bark? Mimosa bark is cheaper than Elandsboontje.

Q. 22. Does it cost more to collect Elandsboontje? There is more labour in picking it out.

Q. 23. Do you require oil for preparing skins? I require suet, and raw linseed oil. Using fat increases the weight of the skins in selling.

Q. 24. Have you ever done any oil tanning for buff leather or wash leather? No; it is altogether a different process.

Q. 25. Do you know anything of the Pretoria Tannery—did it pay? No; it was over-burdened with officials.

Q. 26. Did they make good leather? No; I got a better price for my skins than they got at Pretoria.

Q. 27. How long have you worked at tanning? For 16 years. I had a very good tannery at Ventersburg Road, where I worked with my son; it was destroyed during the war; my son is in Germany now.

EVIDENCE OF MR. W. A. DAVIS.—3rd March, 1904

Q. 1. You are in business here in Bloemfontein? Yes; I have been for 20 years.

Q. 2. Have you done any tanning yourself? No, never.

Q. 3. Where do you get your leather from? From Cape Town, and also from England.

Q. 4. Which do you use most of? Mostly Colonial—it is cheaper.

Q. 5. Can you get the same price for articles made out of it; it is not so well prepared? They are at the present time preparing it equal to English leather.

Q. 6. You can get Colonial leather as good as English? Yes, certainly.

Q. 7. You like it just as well? Oh, just as well; the only thing is, the finish is not as good.

Q. 8. What do you think is the cause of that? It is the preparation. They have not all the necessary implements as they have at home—of course, they tan mostly with oak bark, and in this country they tan with ordinary thorn bark, or with the Berghas. My opinion is, that there was a tannery carried on in the Orange River Colony—Mr. Reisig's.

Q. 9. Did you use any of his leather? I did. What I did see was perfectly tanned—in fact, he took a prize at the show; it was very well prepared.

Q. 10. Did it come cheaper than importing leather? Oh, yes, very much.

Q. 11. Of course, you did not expect it to be tanned the same way, but it was good leather. Oh, yes, it was very well tanned; it was good lasting leather.

Q. 12. You know that it has lasted? Oh, yes, I have used it myself.

Q. 13. If you had an opportunity of buying leather on the spot, you would be quite prepared to do so? Oh, certainly. I certainly think there is an opening for it. They have carried it on at the Modder River. You want plenty of water.

Q. 14. Was the leather you speak of better than the Cape leather? It was not better than the Cape leather, but equal to it.

Q. 15. Did you see the leather sent to the Chicago Exhibition? I think I did, but could not be quite sure. I think he showed me some of it.

Mr. W. A. Davis—[LEATHER.]

Q. 16. Is leather tanned with Elandsboontje better? I have had no experience of it.

Q. 17. What sort of things do you make here? Harness and Saddlery.

Q. 18. Do you employ imported men? I have one who came out from England, but who learned his trade here.

Q. 19. Have you ever employed any Dutch labour? No.

Q. 20. Hand-made work is better than machine-made work? Oh, yes.

Q. 21. Is all your work hand-made Oh, yes a machine goes out of order.

Q. 22. You don't make boots and shoes? No; my work is principally harness and saddlery.

Q. 23. Do you sell any imported saddles ready-made? Yes, I do.

Q. 24. Can you get the same price for what you put together as for what you import? I can get more. I can charge more for that put together here.

Q. 25. And people are prepared to give it Yes.

Q. 26. How many men do you employ? I have three besides myself.

Q. 27. You find a pretty ready sale for all you make here? Oh, yes; there is no difficulty whatever.

Q. 28. What do you use imported leather for? Oh, the different lines—bridles or harness backs—principally harness backs.

Q. 29. You really think there is an opening for a tannery here? Yes.

Q. 30. Do you think there would be enough business to keep a tannery going? I think there would be. Twelve years ago a company tried to start a tannery, but there were a good many against it and it fell through.

Q. 31. Surely there would be a better opening now? Oh, yes; the population has greatly increased, and the demand would be greater.

Q. 32. You know by the proportion of business you could give it yourself, it would be all right? Yes; in my opinion it would be.

Q. 33. Do you use much of the Alum leather? I do not.

Q. 34. You do not like it? There is a great deal of stretch in it. It is first tanned, then coloured, and when the wet weather comes it affects it—we might use it for reins not coloured at all. It would be strong enough for that. Sometimes it is sent here as brayed leather; it is put into a dip with a lot of grease, and when it comes here it is sold as brayed leather.

Q. 35. Proper brayed leather is differently tanned—the oil process? Yes.

Q. 36. Something like buff leather and shoe leather? Yes.

Q. 37. Do you get any patent leather from Cape Colony? We do not use it much here. We might use it for splash boards. I have used a little.

Q. 38. Where did you get it from—from home? I got some from Cape Town—imported, of course.

Q. 39. Do you know anybody in this Colony who could give information except Mr. Reisig? I don't think I do.

Q. 40. There is no other in the Colony? No other.

Q. 41. There used to be a tannery in the Transvaal? Yes.

Q. 42. What sort of business did it do, do you know? I don't know, I think it was a Company. So far as the Orange River Colony is concerned, I think there is really an opening. The hide is on the spot, Elandsboontje, Wattle, Mimosa are on the spot. Mimosa is a splendid tanning material. I used to get my leather from Jones—he never used anything except the ordinary thorn bark. My experience is, that leather has never been so good since he has given it up.

EVIDENCE OF MR. FRANK FRENCH.—3rd March, 1904.

Q. 1. You are with Messrs. Fraser? Yes.

Q. 2. Their business is in Cape Town? Yes. Messrs. Fraser have been for 25 years in Cape Town.

Q. 3. Have they a large business? A very large business, the largest in the country.

Q. 4. Is it confined simply to Saddlery and Harness-making? Oh, no, they make portmanteaus, bags—in fact, everything that is made of leather.

Q. 5. Which leather do you use principally for your work—imported or Colonial? That is dependent on the class of article; for a good set of articles we would use English leather.

Q. 6. Is all the leather dressed in the Cape Alum leather? We dress all sorts.

Q. 7. At your own tannery? Yes. Dressing covers practically everything.

Q. 8. Do you think leather could be tanned here equally as well as in England? I hardy think so; you have not the bark they have in the old country; the bark is the principal thing.

Q. 9. Which bark do you use? Principally the bark from the Georgia trees. Some trees here do not produce any bark at all. We use the Cape Wattle very much.

Q. 10. You have never tried Elandsboontje? No. A lot is done with chemicals in lieu of bark.

Q. 11. You do chemical tanning as well? Yes.

Q. 12. Do you know the Elandsboontje? No, sir, I have had no experience of it. In the old Country they use chiefly oak.

Mr. Frank French—[LEATHER.]

Q. 13. You think that is the reason for the superiority of the English leather? Yes, I do—that is a recognised fact. I have been in most parts of the country, and that has been my experience pretty well all over.

Q. 14. Have you been tanning all the time? No, my department is not the tanning, but making up.

Q. 15. How do you find the Alum leather work? It does very well for rough purposes, but it does not look so nice, and has not such a good finish.

Q. 16. Can you give any idea of the comparative quantities of the leather you use—imported or Colonial? We use more imported; fine work has to be done with imported. Scarcely any leather dressed in the Colony is suitable for portmanteaus or Gladstone bags. It would be impossible to work it up to that stage. Some leathers are dressed as sole leather, but not what a tradesman would call proper sole leather.

Q. 17. Is a heavy portmanteau made up of two thicknesses—a finer dressing put on the outside? Yes, that also helps to stiffen it.

Q. 18. At what price do you sell Alum leather? We can sell Alum leather at 1s. 8d. a pound; best English leather, perhaps 2s. 6d. to 2s. 9d. Of course, there are many varieties of English leather. We could get English leather for 1s. 5d. a lb., but we have paid 2s. 6d.a pound in England. That might be the best harness leather. Of course, you would not put that kind of leather into a harness for everyday use—perhaps for the heads of different countries, for Presidents, Governors, or the like.

Q. 19. For a military harness? There is a special kind of leather dressed for that purpose. For the different kinds of work, you would want different qualities of leather.

Q. 20. Take, for instance, a mule harness, could you get a leather here to make a harness equal to those made in England? Equally as good, and looks as well.

Q. 21. With Alum? No, Alum leather is a very rough leather. Some is dressed white, some brown, something like the colour of the wood in these chairs.

Q. 22. It has not the red look of oak-tanned leather? No, it looks sort of cheap and nasty. It does not look so well, that is the only drawback; it is very strong indeed.

Q. 23. I suppose nearly all your labour is skilled labour in saddlery and harness-making? I am the only practical man in town who makes saddles. I am just in Baumann Square temporarily.

Q. 24. Do you think the labour is so dear that it would not pay to make saddles here? We get a fairly good tree at home for 7s. 6d.—labour on the same thing here would cost one guinea.

Q. 25. Where do you get the leather you use here? It depends on what class of leather you refer to.

Q. 26. Do you get the leather here from your own tannery? From our place in Cape Town.

Q. 27. In Cape Town do you buy from other tanneries? Not as a rule, but if we run short.

Q. 28. You get the hides quite raw? Yes.

Q. 29. Do you know if any of the leather sent from home is made from hides sent from this country? I have no idea.

Q. 30. It is quite possible? Oh, quite possible, but it is impossible to tell; but, as you said, they might come back here as finished leather—there are so many hides sent away from here.

Q. 31. Do you get a better price for articles made from English leather? Oh, yes, we can always get it, it is so much better finished.

Q. 32. You could not compete with the finish of English leather? Oh, no, not at all. I found the same thing in Kingwilliamstown, although they had the bark, and practically everything they have at home. They could not put the same finish on it.

Q. 33. Is it not possible to finish as well? You could put the same work in it, but you would never get the finish.

Q. 34. Do you sell any imported articles ready-made? Yes.

Q. 35. How do you find them compare? Can you get the same price for articles made at Home as for those made here? In Cape Town, oh, yes. In Pretoria we could get more for a saddle made there than for an imported one, although they were equally good, but it was a sort of idea of the Dutch, that being made in Pretoria, it was better. They used to come in and watch the saddle being made up; we could get a better price.

Q. 36. In Cape Town you could get equally as good? In Pretoria we got £11 10s. for a gent.'s saddle—that was for a saddle only.

Q. 37. Is there a tanning factory in Pretoria? There used to be one called the Transvaal Tannery, belonging to Sam. Marks. They used to dress leather, but very roughly; chiefly for the Boers.

Q. 38. Is it still going? No.

Q. 39. They started just before the war? Oh, no. I was in Pretoria for seven years, and it was there before I went.

Q. 40. Do you know what labour they employ in that tannery—English labour? There was all sorts, English, Scotch and Irish—then, of course, the rough work was done by Boers and Kaffirs.

Q. 41. Do you use any Boers for Saddlery, or all Englishmen? I have never met a Dutchman yet who was a tradesman since I have been in the country.

Q. 42. The work is too skilled for them to take up? Yes, yes, we have a lot taking situations as improvers, but they never come to any good—they do not seem to have the ability to learn.

Mr. Frank French—[LEATHER.]

Q. 43. Can they not do the rough work? No, nothing at all. In Cape Town it is different, where we have Malays. They are as good as any white men. They can make portmanteaus, bags, etc., as good as any men in the country, but then these are not what we would call Dutch.

Q. 44. I suppose the reason that your firm have started a branch here is because they expect to save money by making the goods here rather than importing from Cape Town? Yes. Our people have come to the conclusion that there is room for a good business here. It will be cheaper to make on the spot. Say, for instance, a person came for an article which we had not in stock, we could make it in a few days, when it would take over a week to send to Cape Town for it.

Q. 45. Will you get local leather? We have to find that out yet.

Q. 46. Can you tell us what price you pay for the leather? It all depends on the leather—you can get it from 1s. 6d. to 3s.

Q. 47. What is the price of the best Colonial leather? From 2s. 6d. to 2s. 9d.

Q. 48. The worst? About 1s. 8d.—there are different kinds—it depends upon the different parts of the hide used.

Q. 49. Do you do any oil tanning for buff leather? No, sir, we import that. I do not know any place in the Country where they do.

Q. 50. Would the plant for starting a factory be expensive? All you want is material and good men.

Q. 51. I suppose you use a sewing machine? It depends. If a good article, you do it by hand—if inferior, you use a machine.

Q. 52. It is not an expensive plant in that way? Oh, no. I have got a full complement of tools worth, I should say, £10—practically sufficient for three men.

Q. 53. That price you gave us for leather, was that at Cape Town or here? In Cape Town.

Q. 54. Do you make any boots? No, sir.

Q. 55. You think there is a fair opening here for such a place as yours? I do, we expect to do a good trade.

Q. 56. You think it better to make yourselves than to import? Oh, yes, our people have a very good name. We are pretty well known over the country, and expect to do a very good trade—We have a good connection.

Q. 57. Have you any idea of starting a tannery here as well? No, we have no intention of such a thing.

Q. 58. You don't think that would pay? I am sure they will not go in for that; at present they send us the leather.

Q. 59. How many hands do you employ? It all depends upon business. During the war we had 500 and could have employed as many more if we could have got them. Just now there are close on 100.

Q. 60. How are they divided? I could not just say.

Q. 61. I suppose you are startng here on a small scale? I am only here myself. I do absolutely everything myself.

Q. 62. You will be selling practically what they are making in Cape Town? No. sir, I am making up myself in my spare time.

Q. 63. Do you know anything about the process of tanning? No, sir, that is out of my line. I think there would be a market for the leather if made, but I am afraid not sufficient to guarantee starting a factory.

Q. 64. You have a market for manufactured goods? Oh, yes, to a large extent. This is a growing town and things will go ahead when the labour question is settled.

MESSRS. JOHN & PHILIP BOTHA ON THE ELANDSBOONTJE.

Q. 1. Have you any Elandsboontje on your farm? Yes, but on my neighbour's farm there is a great deal. It is two or three feet long, about 6 inches in diameter, 7 or 8 inches thick.

Q. 2. It has a bush to it? Yes, about 12 inches high.

Q. 3. Is it plentiful? Yes.

Q. 4. Enough to provide a factory? Yes. In the Transvaal there is also a lot, it spreads very quickly.

Q. 5. What sort of places does it grow on—on the hills or a flat place? On flat ground. The cattle will not eat it.

Q. 6. Have you ever done any tanning yourself? Yes. The people on the different farms tan just for themselves.

Q. 7. They always use Elandsboontje for tanning? Yes.

APPENDIX III.

EXTRACT FROM REPORT OF MR. B. H. O. ARMSTRONG, a Member of the Commission.

LEATHER AND BOOTS.—I obtained much information on this subject through the kindness of Mr. Woodhead, of Woodhead Brothers (Woodstock Tannery), whom I visited. This tannery has a large capacity (50,000 hides per annum), but owing to the scarcity of hides, is now running at a much reduced capacity. The tannage is of wattle grown in Cape Colony, with an addition of hemlock essence for sole leather. This latter is the liquid obtained from hemlock bark, and is imported chiefly from Canada. Mr. Woodhead prefers the black wattle, but its cost is prohibitive for ordinary work. The ordinary wattle is at present very cheap in Cape Town, owing to the small amount of tanning being done, and it can be obtained as low as £4 a ton. Woodhead Brothers have at present to import a large number of their hides (from Australia, and North and South America), as they are

not obtainable in sufficient numbers in this Colony. They also import a considerable quantity of leather for boots and harness making. This firm at one time made boots of nearly every description, of which I was shown samples, but Mr. Woodhead informed me that they had given up the manufacture of all but the roughest boots and veldtschoens, as they could not make the better classes of boots as cheaply as they could import them. Veldtschoens, and rough boots and shoes pay well and can be made with very little training; in fact, most back-country Boers can make these. They can be made without plant or machinery, but cutting machines are useful and economical. This firm also makes much harness, a fair proportion of which is made with alum-tanned leather. This makes a cheap strong harness, which requires very little looking after. Mr. Woodhead was of opinion that it would be profitable to tan (in the Orange River Colony) the roughest leathers, and to make harness, veldtschoens, and rough boots and shoes; more than this he considered it unwise to undertake. The greater part of the labour used by Messrs. Woodhead is quite unskilled when first engaged, and the time taken to teach men is quite short.

APPENDIX IV.

LETTER FROM MR. L. RICHARDSON.

S.S. "Carisbrook Castle,"
11th December, 1903.

H. F. WILSON, ESQ.,
Colonial Secretary,
Bloemfontein.

Dear Sir,

In conversation with you at Bloemfontein on the 26th November, I think you suggested that I should put down some notes as to the possibility of establishing the tanning industry in the Orange River Colony. There is little that I can say, but one or two points may be worth putting down. I believe the Boer farmers have been accustomed to do each a litte tanning on their own account, but it is not an industry that can be carried on either economically or with the best results on a small scale. In England almost all the small tanners have dropped out and the trade passed into the hands of large firms, many of which have an output of thousands of hides per week. Further, I am doubtful if it is an industry which can be carried on to advantage in the Orange River Colony. One of the first requisites is a good supply of good water, free from mud, organic matter, and not too hard. It would, I imagine, be very difficult to find in the Orange River Colony an unfailing supply of such water, which is not more wanted for other purposes. The tannery with which I am connected (E. and J. Richardson, Newcastle-on-Tyne) used over 100,000 gallons per week, we would use more if we did not have to pay for it, and this is not a very large tannery. The great variations in temperature in the Orange River Colony would be a further difficulty in conducting some of the processes.

It would probably pay better to dry the hides and skins and send them to Cape Colony or to England to be tanned. A large number of skins are already imported into England in the raw state from South Africa, and "Cape Goats" make a particularly fine leather for book-binding.

Of tanning materials grown in South Africa I know little, but our firm buys Mimosa Bark, grown in Natal by Angus & Co. (Ravensworth Dalton Station).

The above remarks do not necessarily apply to certain processes of dressing leather with fats or with alum and salt, which give a leather suitable for some purposes. Judging from English experience, the proper flaying and drying of hides would be matters worth attention. The best people to advise on all these points would be some of the tanners already established in South Africa, such as Mossop and Garland, of Rondebosch, and Sanderson and Co., of Woodstock, both near Cape Town.

Please do not trouble to acknowledge this.

Yours sincerely,

(Sgd.) LAWRENCE RICHARDSON.

APPENDIX V.

ASSAY OF TANNIN IN ELANDS BEAN, BROUGHT TO THE GOVERNMENT LABORATORIES BY MR. SCOTT.—21st June, 1904.

Sir,

I beg to report the results of my analysis of the above mentioned plant, which are as follows:—

Seeds from Pods—a very slight trace of tannin.
Leaves and Stem—slight trace of tannin only.
Root—rich in tannin.
14.76 per cent. of tannin.
49.80 per cent. of starch, pectin, etc.
34.08 per cent moisture (dried at 120 degrees Fahr. for 4 hours).
1.36 per cent. ash.

This plant appears to me to belong to the family of Acacias which are large producers of Tannin, the Mimosa being one of them. The experiments have been very difficult owing to the absence of special re-agents, and I intend to continue my researches into the chemical costituents of this plant, and I shall be glad if I can be furnished with a further supply of this plant, more especially the root; it may prove of some economic value for tanning and dyeing, etc.

I have the honour to be, Sir,

Your obedient servant,

(Signed) P. TARGET ADAMS,

Government Analyst and Bacteriologist, O.R.C.

APPENDIX V. A.

LETTER FROM MESSRS. BAGSHAWE, GIBAUD & CO.

Port Elizabeth, 2nd August, 1904.

J. H. MEIRING, ESQ.,
Collector of Customs,
Bloemfontein.

Dear Sir,

We note that your Government ask through the papers for information re starting industries in your Colony, and also that they are offering a bonus to those who will commence manufacturing industries in the Orange River Colony that are suitable and likely to be successful.

We shall be glad to know what amount of bonus and upon what conditions it would be given.

We may say that we think our industry, viz., Leather Tanning and Boot and Shoe making, especially suited to this country, and that it could be made a very important factor in the development of South Africa, but here, in the Cape Colony, it is slowly dying out, consequent upon the competition of imported leathers, boots and shoes, and harness, which are sent here from America, England, Australia and Germany, and which the present low Customs duties enables merchants to sell against our better class productions. The Cape Government will not entertain giving us any support, some tanners have already given up business and most of us that are left are doing more in imported goods than in Colonial Tanned lines.

We, as a firm, would be glad to transfer our plant of machinery and business if your Government could see their way to support us against the over-sea importations, more than is now done. We hope to be favoured with your reply, and remain,

Yours faithfully,

BAGSHAWE, GIBAUD & CO.

APPENDIX V. B.

MESSRS. MIDDLEMORE AND LAMPLUGH, LTD., TO CROWN AGENTS.

Holloway Head, 14th September, 1904.

Gentlemen,

Our attention has been called to an article in the "Times" of the 10th September on the Orange River Colony Commission to investigate the industrial developments in the Colony, in which special mention is made of leather industries.

As we have branch works at Kingwilliamstown, Cape Colony, it has occurred to us that we may be of use to the new Colonies and we shall be most happy to place our plant both at the Cape and here, and our experience, as far as possible, at the service of the Colonial Government to assist in developing the industry.

If you think we can be of use, we shall be glad to hear from you.

We are, &c.,

MIDDLEMORE & LAMPLUGH.

(Signed) WALT. B. HOLT.
Managing Director and Secretary.
February 26th, 1904.

Messrs. Middlemore & Lamplugh, Ltd.—[LETTER LEATHER.]

THE PRESERVING INDUSTRIES.

EVIDENCE OF MR. SCHRODER.

I have had experience in Jam-making and general preserving, including tinning of fruits, and the manufacture of Chicory and Coffee, Chutney, Mustards, Peppers, etc. I have had experience in the use of Natal Sugar for Confectionery. Some time ago I had charge of a factory at Port Elizabeth, but our experience then of Natal Sugar was not very favourable, so far as preserves were concerned. The Natal sugars are not so thoroughly clarified as the Dutch Crushed. But in Confectionery and Preserves it is necessary to get as good a sugar as possible—hence the manufacture of general Jam-making and Preserving will have, I consider, to fall back, or will depend upon the supplies brought from Europe. I don't think it would be the thing to mix it with beet sugar. Natal Sugar is on the spot, and to bring beet in and pay the duty and the oncost, would not be to their advantage. I have never had experience in Natal itself, but I believe they do, to a large extent, use their own sugar. Six years ago when I was in the business we certainly could not use it with advantage in Port Elizabeth. For a high class of Confectionery, the best sugar must be used. Even for a London mixture, you have to be very careful, as they will not retain their quality unless made from a refined sugar, but something not quite so good might be used for a Colonial mixture, or sugar stalks, or cheaper sweets. The question of duty would affect very materially the cost of manufacture. Under the old Customs Union, Confectioners in Cape Colony were allowed a rebate of the duty on the total quantity used in the manufacture of sweets. For instance, all sugars were kept in bond at the works, and your daily supply was taken out in presence of the Customs Officer, and a record kept of the total gross pound weight per day, which was taken out of sugar. At the end of the month you had to show your return, what was manufactured from that sugar, and upon the weight of sugar there was a rebate allowed, but that, I believe, under the new order of things, has also ceased to exist—hence Colonial Confectionery to-day is placed at a very serious disadvantage; in fact, it is throttled, and I see there a very, very great disadvantage for the Colonial manufacturer to overcome unless he is very generously aided by the various Governments, notwithstanding the protective duty of twopence a pound. I think the Natal Sugar could be used in the making of Jam. Natal Sugar has improved considerably during the last two or three years, and no doubt every season will find it better than the last. When in Natal last May I saw over the Refinery just out of Durban, and there they had some splendid samples of refined Crystallised Sugar, and I do not see why the Natal Sugar should not be brought up to a standard of strength and quality. I believe that the Natal Sugar is far better and purer, but at the same time, they have not yet got to the necessary stage of refinement. The reason they can sell sweets so much cheaper in Europe is on account of the labour—it is so much cheaper there. In a factory at home, the principal labour employed is girls, working under the direction of a manager, who is responsible to see that things turn out all right, but the major portion of the labour is done by very, very cheap means. The difficulty here is, we cannot obtain that cheap labour. You must necessarily have here higher priced labour to turn out your article. We had to import men from the large works at home, but you could not get them to work for a small wage, the only labour here procurable being native labour in rough stages in the factory. It would take time to get cheap labour here which would be satisfactory. The stopping of the bounties has affected sweets about 2s. a cwt. Of course, that is a considerable rise for home prices, but it does not materially affect the oncost

in exporting goods to this country. 2s. a cwt. would be no protection for a manufacturer here. Even with a rise of 2s. coming from England it is not sufficient to protect a manufacturer in this country although he does use Natal Sugar. You do not get the return from Natal Sugar which you get from Dutch Crushed. It boils away more. It is a problem which the manufacturer has to keep in view that he gets the best possible return from the raw material. There is more moisture in Natal Sugar than in imported sugar. White Crystal does not dry out more than 5 per cent., but it used to dry out much more than that. It pays better to use imported sugar by far. From 100 lbs. of sugar, you can make 100 lbs. Sweets, depending a good deal on the class of sugar. If you use Natal Sugar you cannot put so much moisture in as with Dutch Crushed. The moisture does not waste with the vacuum system. You get the steam in the vacuum pan, which you do not get in the boiling system. That, of course, is an important detail for the manufacturer. I think so far as this industry goes, there should be a big opening for it in this country. There is a great quantity of sweets consumed, a considerable quantity is brought from Cape Colony and East London. Why should it not be made in this Colony when it can be made out of its borders? The Government would have to be prepared to assist manufacturers either by rebate system or bounty, and also by railway rates in bringing up material for the manufacture of various lines. I think there is no reason why there should not be a field of industry opened in this Colony. Natal Sugar has improved greatly during the last three or four years. 16 years ago it used to arrive like a sack of concrete, and had to be ground down. Even their white sugar (more brown than white) had to be put through a disintregrator. Undoubtedly, Natal Sugar is pure cane. There is no doubt Natal is coming up to date. There is not only the question of sugar, but there are the other necessary things used in the manufacture for the finer production of the article—these are tin, wood, for the cases, etc. In every one of these details the Government would need to be prepared to give a considerable advantake to the manufacturer in getting his stuff up from the coast for these purposes—otherwise, the thing would be killed from a railway point of view. I consider the Orange River Colony is being bled at the expense of the Transvaal in the matter of Railway rates.

I do not know if the preservation of fruits, etc., could be carried out successfully as a cottage industry, but if some arrangement were made as to the carriage of the fruit from the different small places, it might be an inducement to the people to go in for the growing of their fruit on a larger scale. There would be a greater inducement for them to collect a larger quantity. We used to have fruit brought a three or four days' waggon run to Port Elizabeth. The fruit need not necessarily be perfectly ripe for preserving—you can pick it almost in its green state, and I do not think there would be any need to fear a three days' waggon journey. I do not anticipate the industry will be started for 12 months, and by that time waggon transport will have assumed its normal condition as before the War. I think we could get over the difficulty of collecting the fruit—a centre of a three days' journey would not harm the fruit in the least.

The question is, which jams are used most in the Colony—Cape jams or imported jams? I think you could get Cape jame if you cared to place an order of 1,000 cases. You could get good Australian jam now for 5s.—we are retailing English jams at Springfontein at 9d. a tin, and have done so since the War—English jams, either McConochie's or Morton's, 9d.; Cape jams at 8d., or 7s. 6d. a dozen. To my mind, a competitor in this Colony has to study his competitor at the Cape Colony. I do not see why jam should not be made to a very

large extent in this country. We grow peaches, apricots, quinces. I do not think we could get enough oranges. I know many farmers who neglect fruit growing for the reason that there is no special interest in it, but who would go in for it were there any special inducement.

The manufacture of Confectionery is a science peculiar to itself. You cannot get an all-round Confectioner; there is the boiler man, the pan goods man, machine goods man, French goods—all separate branches of the industry, and men apprenticed to their trades follow one of these branches and make it a speciality. The labour at home is largely done by girls, governed by heads of these different departments. I managed Anderson's Confectionery—the largest Confectionery works in South Africa. They have the latest up-to-date plant there. Their great difficulty was to reduce the price of labour. If you get girls, they save a little money, and get married—boys buy another wife. I do not think you could procure white labour here at the price wanted. There are very many serious difficulties in the way of a manufacturing industry in this country.

The plant required would cost for Confectionery at least about £2,000, but this would not include tinning. It would cost that sum at home. Of course, it is a big question off-hand, but could be got at by a statement of the requirements. I would require to consider the matter before undertaking the management of this industry here. The amount of plant required would depend upon the amount of trade. You would want fewer or more hands. The fruit is not prepared before being brought to the manufacturer—take peaches, for instance, you simply have them brought in by the farmer, they are thrown into steamers, then into pulp machines, which do all cleaning, taking out stones, leaves, etc., put into pans and boiled into jam. You must have up-to-date machinery in making jam, steam boilers, and jackets, and a steam engine. The power of steam enters very largely into the manufacture of jam-making and confectionery. Steam jacketing pans turn out 100 lbs. in an hour, where a housewife would take a week by ordinary boiling.

The making of Chicory could be combined with this manufacture, but it is a very expensive article. We did not go in for it at Port Elizabeth. We were complete Confectioners from Colonial Sweets to French made goods, Jams and Preserves in all branches, Chicory and Coffee grinding, tinning and packing—all these might be embraced in one factory. There are many different lines, picking, tinning, packing, etc., all under the industry of Jam-making, but the other work, Chicory, Cream of Tartar, Baking Powder, etc., could be used as filling in lines, taking the hands from the different departments where not so busy. The object of each line would, of course, be to make it pay, but with the whole, you could afford to work the thing at a reduction all round. I would not tin any vegetables with the exception of tomatoes. Tomatoes are more classified as fruit. I have not gone in for preserved vinegar. I consider Grape Vinegar might be gone in for successfully here. These are things which you need not go out of the country for, the fundamental parts growing here. Chicory is a difficult business—in fact, I do not think it would do here. The climate is too dry. Chicory requires a good deal of moisture. We tried it for a few years, but found it was a thing which could not be grappled with. A Chicory root contains 75 to 80 per cent. of moisture, which has to be taken out before you can get to the bedrock.

The great difficulty I see is, that this industry would require to be nursed. The question which presents itself to my mind is, is the Government prepared

to do that for the benefit of the Colony hereafter? and unless helped in that direction I do not think anyone would be prepared to enter into the thing. The fruit here is all right in fact, the flavour of our fruit would be very much better than the fruit grown in the Colony. Take, for instance, peaches—I have not tasted better in the country—they have a decided flavour. That is what is so much needed in Jam-making—to get a fruit of a decided flavour, so that the flavour will be retained in preserving. We had to import strawberry pulp. It is not necessary to import strawberry pulp now, but hitherto it has had to be imported. That might have to be done for a year or two until you got supplied from your own borders. Marmalade pulp would not pay. Marmalade is principally made at Port Elizabeth. All round Humansdorp there are enormous quantities of pompelmoes grown. Pompelmoes would grow here, but it would take time before you could get sufficient production. At home there is far more sugar put into jams than here. It does not pay to do it here on account of fruit here being much cheaper than sugar. Our jam may not be up to the standard of looking so nice, yet it is much purer than imported jam. Take a good quality of peach, apricot, or Cape gooseberry, and no jam is purer. Guava trees grow here, but do not bear fruit sufficiently. It is a fruit which makes one of our finest jellies. It is a first-class preserve, and as a jelly it stands first. Of course, there is quince—that would be all right. Guava is found principally near the Coast, where the climate is damper. The climate here is too dry.

I don't think there is anything more of importance I can remember, but as far as I have told you, you could form your own basis. As I say, an industry of this sort would require to be nursed—that is undoubtedly the first thing that would have to be secured. It is a trade which could be largely developed, but you would have to so direct it that the people who engaged in it would come up to the competition at hand. You must remember that the Cape Confectionery and Preserve Trades have made some wonderful strides those last few years, and you have that to consider. The nearest competitors would be the Cape and Natal—the Cape especially. If a factory were established in a good centre, you would necessarily make an outlet for the farming community to go in for fruit-growing more than is done at the present time.

I have never tried carrot-preserving here. It is something like tomato jam; some people do like it, but the flavour does not seem to agree with the sugar. I have nearly forgotten one thing. There are two or three progressive farmers at Springfontein who, since the War, have gone in very largely for fruit growing, and just the other day they were saying if they had an outlet for their fruit they would go in for cultivation of fruit even on a larger scale than now.

I have had no experience in fruit-drying, but many firms go in for peeling, and drying as a "filling in" branch.

I have had experience in pickling on a small scale, and there is no reason why it should not be done to a success; onions, cucumbers, cauliflowers, etc., can be grown in this Colony. We imported the tin plate, but made up our own tins. The manufacture of tins alone employs a lot of labour. The cutting can be done by unskilled labour. Tin-making is practically done by machinery. In jam-making unskilled labour can be used very largely, with the exception of the actual boiling. A skilled man might be got to look after two or three branches of the work. Half a dozen skilled hands might be required. A good pan goods man or a sugar boiler might look after two departments, but as a rule they generally have each their own separate work. They are entirely

different classes of work. The whole factory might be run with five or six skilled men—for the rest of the work unskilled labour could be employed.

EVIDENCE OF MR. G. SHAW SCOTT.—27th February, 1904.

I take it that this applies to the Orange River Colony. There is no doubt fruit can be grown in all parts of the Orange River Colony, but more especially in the Conquered Territory. I am fully convinced that if people went in for it on commercial lines, there is money to be made out of it. At the present time the people go in for leading water rather than cultivation. I do not think leading water is altogether unnecessary, but cultivation is more essential.

Then, with regard to the varieties of fruit, I should strongly advise apples. Of course, there are other varieties, pears, plums, peaches, apricots, and especially Californian prunes. These, of course, might be dried and packed in boxes. They do not suffer as ordinary fruit when you have excessive rain when the fruit is ripe. Taking into consideration that we get our rainfall in the summer very often when the fruit is ripe, I would suggest canning and drying fruit, with an evaporator. There are several kinds of evaporators on the market, and we have used them in England very successfully.

(Shows price list of evaporators, with illustrations.)

The evaporator is not an expensive machine, and can be used for drying hops as well as fruits. It all depends on the state of the fruit and the capacity of the machine used, how long it would take to dry. Take, for instance, peaches or apricots, which do not contain so much moisture—they would dry rapidly. Independent of the evaporator, you could go in for bottling. We have been in the habit of using a Sterilizer. (Shows illustration.) The fruit is put into bottles with patent stoppers, then placed in a chamber where steam is injected. Directly the steam is out of the fruit, the bottles close. A much cheaper machine could be got than those shown. I take it that the idea is for people in outlying places to be able to handle their own fruit. I should strongly advise having an Evaporator and Sterilizer in different centres, and the people could bring in their fruit to have it properly treated. One manager might be secured to supervise the work and the packing, and in this way labour would be economised. It certainly, to my mind, would be better to sterilize these sort of things. If the people went in for cheaper sterilizers, they could not do the work efficiently. I would not be inclined to suggest your going in for jam-making. It would be very much better to dry and sterilize. The length of time to sterilize would depend altogether on the variety of fruit from 15 minutes to an hour. At home I had a small place fitted up with steam pipes and a wooden chamber. Directly the fruit was put in, we turned on the steam and kept the fruit in there a sufficient length of time. We found that we killed the germs at, say, 180. The great misfortune is, that people in this country have not gone in for drying fruit on anything like commercial lines. A fruit dried in a thoroughly business-like way is very palatable. It can be made to look most attractive with the sterilizer. I think a choice variety of fruit treated in this way would be quite saleable—in fact, I think people would buy it rather than the imported stuff. If the fruit has to be carried for some distance, it would be necessary to pick it under-ripe. For evaporating purposes it would do to have it picked, say, three days beforehand, but it is always preferable to have it as freshly pulled as possible—however, I see no objection to its standing

three days. An enormous quantiy comes from Holland and the South of France to England to be made into jam—that would mean more than three days—and it is always advisable to get ripe fruit if you possibly can. To sun-dry prunes, the fruit is dried and put into a large receptacle made of galvanised iron, then dipped into a lye, which causes the skin just to crack; then the fruit is swung round and dipped into cold water, then put on to trays and kept in the sun until all the moisture can be squeezed out; then put into a heap, where fermentation more or less sets in, then put into water with glycerine, to make them brilliant. I think these would keep as well as French prunes. This is quite a new industry in South Africa, and in course of time would improve. From a grower's point of view, they compare very favourably with imported stuff. All sorts of fruit and vegetables will evaporate. I feel satisfied that in the near future we could have a very abundant growth of prunes. There are plenty of them in the Conquered Territory. They are very sweet and the flavour is good. I used to sell tons of fruit to jam manufacturers. We had a contract with Cross & Blackwell. They took a whole crop at so much per ton.

I have not had any experience in actual jam-making beyond this sterilizer. I think the evaporator would be the best way to treat the prunes here. For sterilizing they are better to be perfectly fresh.

The labour employed for evaporating or sterilizing fruit need not be skilled. I am confident, from what I have seen at the Relief Works, you would be able to find intelligent fellows to run these things. There would, of course, have to be a responsible man with a fair knowledge, but the principal labour could be unskilled. I think it would be better to have one centre for teaching the people, it would be an experiment to start with. Every variety of fruit would be suitable for treating in this way. I question whether the fruit is in sufficient quantity here to warrant starting anything of this sort at present—you might possibly in the Conquered Territory, even there a large number of the trees were cut down during the War. At Parys there might be enough; peaches and apricots do very well here. Quinces could be put through the sterilizer. Pears could be cut and treated similarly, also tomatoes. Cape gooseberries would do particularly well here, and a crop might be looked for the first year. The only thing to fear with the Cape gooseberry is, that it is very liable to the red spider, which is difficult to cope with. It is very difficult to get a thorough application of sulphur—they grow best in sandy soil and make excellent jam. Strawberries can be grown to perfection. I think if you go into the Conquered Territory it is not necessary to use as much water as the people do.

From what I know of it, to start an establishment at Parys (where, I think, there is enough fruit), you would want a fair sized evaporator, perhaps costing from £150 to £200. An open shed would be the best place to keep the evaporator. Somewhere in the Orange River Colony (Vredefort, I think it was) I saw an old boiler, and my idea was to get hold of it, and make a wooden chamber for sterilizing.

(Conversation as to style of bottles required and illustrations, with prices, shown.)

If the bottles could be made in South Africa, it would save carriage.
Sterilized fruits could be put in tins.

In the event of anything being decided, it would be well to get price lists from several of the leading firms in America, as well as England.

Both fruit and vegetables can be evaporated at the same time without the one giving a taste to the other.

Asparagus and Rhubarb will grow well in the neighbourhood of Parys, and these could be tinned.

As an opening for white labour, I am afraid, however, these processes would not be very suitable. The number of women who could be employed would be small until you got the thing on a very large scale. Assuming you began on a small scale I think, including packing and everything, six or eight adults are all that would be required. There might be an opening indirectly to growers of fruit for sterilizing only—not including jam-making.

Marmalade Oranges.—In this country I do not think there are any suitable at the present time. Jam-making, of course, is simple enough. (Shows illustrations of cooking utensils for jam-making.) It is just a question of getting the necessary appliances. There is plenty of fruit here—quite enough for jam-making, even to start now. The plant is not expensive. For £500 you could start an establishment, in which you could sterilize, evaporate, and make jam. The carriage is the great drawback.

Green peas could be sterilized—in fact, that is the only way they can be treated satisfactorily. There is a lot of new machinery out for pea preserving, but it is very expensive. (Shows illustrations of pea machines.) Beans grow well in this country and could be bottled—also the ordinary scarlet runner. If the thing made any headway, and you got larger machinery, practically you would be running a factory. I would suggest Parys as the place where fruit is grown most abundantly, and they have also got water power there. Currants do not grow well in this country. I have tried them, but without success. Cherries grow here, but it would take seven years before they would bear fruit. I do not think there is any other fruit I can suggest, almost any variety could be treated in this way.

I consider jam-making would be too costly an industry. It is much slower than sterilizing, and wants much more labour. We have tried jam-making in different parts of Kent, but without success. The larger manufacturers have always been in a position to cut out the smaller ones in buying up the fruit. Blackberries might, I think, grow here, but we have never been able to do much with them—we had one or two varieties imported from America, but they did not take on. I don't think raspberries would do here. Asparagus does splendidly in the Conquered Territory. Imported Asparagus is very dear; 1½ lbs. cost 2s. 6d. It could be sterilized and would be very profitable. Mealies would do well for sterilizing. I have written to Australia and America for a variety of seeds which I intend experimenting with. Grapes could also be sterilized.

PRECIS OF INFORMATION SUPPLIED BY MR. H. A. BIDEN, CONTRACTOR, TEMPE CIVILIAN MESS.—Saturday, March 12th.

I have been in South Africa for 10 years. I was in business as a Sweet Manufacturer for one year in Cape Town. I have also been in business in Johannesburg and Fordsburg, manufacturing sweets.

My father is a Sweet Manufacturer in Nova Scotia, and I learnt the business with him.

Mr. H. A. Biden—[SWEETS.]

The great drawback to the business in South Africa is the duty on sugar. Sweets (common mixture) can be bought at Bloemfontein at 3½d. per lb. Sugar at 3d.

I can buy sugar now, duty paid at the coast, at 18s. per 100 lbs.

When I was in Cape Town I used to get a 5s. rebate on sugar and I could buy it at from 8s. to 12s. per 100 lbs. I used the best refined—Beet preferred.

From 1 lb. sugar hard boiled you get 14¾ oz. sweets. In Fondants you get 2 oz. more weight sweets than you used sugar.

I have used Natal Sugar, but it is very wet. I used it in 1894, 1895, and in 1900, when it had improved. Mauritius or German Beet was just as cheap. I bought sugar at Fordsburg 1½ years ago at 15s. per 100 lbs. The great drawback is the expense of importing packing material.

Pasteboard can be used as in Canada up to 25 lbs. Wood would have to be imported.

The greatest help which could be given would be to cheapen the price of sugar and glucose, used for manufacturing purposes, either by rebate or reduced Railway fares, or both.

The proportion of skilled labour to unskilled in a factory without steam is 1 to 4—with steam, 1 to 20. Cost of plant (without steam) to manufacture 6 cwt. of sweets per day, £250 landed here.

Sugar landed in Rhodesia cost 22s. 6d. Sugar landed here costs 25s. 6d. I believe in Beet Sugar here.

There is one Sweet Factory at Johannesburg—Jacobs. In Cape Colony, J. J. Hill, Shepherd, Anderson are the chief factories.

It is a good thing to manufacture Jam and Sweets together. The rebate system in Cape Colony worked smoothly.

I should be prepared to start here in a small way with Government assistance.

Hand-made goods pay better, but employ a large number of girls.

Chocolates for manufacture ought to be imported into the Orange River Colony as cheap as anywhere else. Refined Chocolate costs, in New York, 1s. per lb.

Sugar costs in New York 15s. per ton. Freight from New York, 30s. per ton.

4 lbs. sugar made into creams, gives 4½ lbs.; coated with 14 oz. chocolates, gives about 5½ lbs. sweets.

Cost of manufacture:—

4 lbs. sugar, at 3d. per lb.	1s.
14 oz. chocolate	1s.
Labour	1s.
Packing	3s.
	6s.

Chocolate is worth, wholesale, 1s. 3d. per lb. This is a more expensive class of goods, which pay better in proportion.

For cheaper goods an estimate might be made as follows:—Cost—

16 lbs. sugar at	4 0
Glucose	0 3
Colouring	0 11
Labour	0 9
Packing	0 6
	6 5

15 lbs. sweet, at 3½d., 4s. 4½d.

The £250 mentioned above for plant includes everything. Steam plant with 10 H.P. would cost about £200 landed here. The business might be made to pay well if sugar were cheapened, combining wholesale and retail.

EVIDENCE OF MR. H. H. BEAMISH AND MR. HATTON, REPRESENTING MESSRS. CROOKS & CO.—21st April, 1904.

A letter was read from Mr. Beamish, in which he offered to start a factory for the manufacture of Jams, Confectionery, Biscuits, &c., on condition that the Government would supply cheaper railway rates for machinery and imported materials.

Mr. Beamish was of opinion that Parys was at present the best centre for a Jam Factory, owing to the quantity of fruit grown there, and also looking to the fact that the new railway to be opened shortly would put it in touch with the other towns of the Orange River Colony and Johannesburg, and stated that he was prepared to put £1,000 into the business at the present time. He explained that he had seen Mr. Scott, of the Agricultural Department, who had agreed with him that, at the present time it would not be advisable to expend more than a few hundred pounds on plant, owing to the comparatively small quantity of fruit which could be produced for some time to come.

Mr. Meiring explained that there was no duty on machinery driven by power.

Mr. Beamish explained that his idea was not only to go in for Jam-making, but also to make pickles, confectionery, biscuits and vinegar, as the amount of fruit available would not be sufficient to keep the factory going the whole year round. He also thought of going in for pepper, as the pepper tree grew very well here, and he considered, with the proper treatment, could be improved very much, and could always command a good price. He also thought of going in for camphor, which was a very good paying article. The wood, too, is valuable. At present the Japanese have the monopoly of camphor. It takes a long time to grow to maturity. It is tapped like the India Rubber tree.

Mr. Beamish submitted the following proposals as to the form in which he would require Government support in order to make the factory a profitable concern:—

Mr. H. H. Beamish and Mr. Hatton—[PRESERVING INDUSTRIES.]

1. A bounty from the Government of 1d. per lb. on all preserves or other manufactures.

2. That all machinery and plant necessary should be railed at S.A.P. rates.

3. That the Government arrange with the Municipality of Parys for a free grant of a suitable plot of land for the factory, the same to be exempt from local rates for 10 years.

4. That the Government grant us sole concession for five years.

5. That the contracts turned out by the factory be inspected and stamped as passed by the Government.

6. That the Government make advances on the pound for pound principle, as per Clause 7 of the Land Settlement Ordinance—5 per cent. payable in 20 yearly instalments.

With regard to Condition No. 6, Mr. Meiring explained that this was impossible, as the ground did not belong to the Government, but to the Municipality, but he was quite sure arrangement could be come to with the Municipality. Mr. Beamish, therefore, waived it.

With regard to sugar, Mr. Hatton explained that, for ordinary jam the Natal Sugar would do very well, but for finer confectionery and special jellies, refined sugar would be necessary, and some conversation took place as to the duty on sugar, which, Mr. Meiring explained, was 3s. 6d. on unrefined sugar (with the exception of sugar from Russia, which was not in the Convention), and 5s. on refined sugar.

Mr. Beamish was not ready to state just what his turnover would be per year, but was of opinion that it would not be advisable to expend more than five or six hundred pounds on machinery and plant as a commencement. It was difficult to estimate what the output would amount to, as it would be impossible to work the jam factory without the addition of the other products mentioned.

Mr. Meiring was of opinion that a bonus should be offered, but that stipulation should be made for a minimum output.

Mr. Beamish requested that a graduating scale as to bounty might be fixed, such as 1d. per lb., the first year, ¾d. the second, and ½d. the third, or something of this sort. He explained that in Canada, industries were fostered in this way, but on a basis of 10 years, graduating down to five or three years.

Mr. Meiring was prepared to recommend this for five years, and was of opinion that, by the end of that time the factory would be able to stand alone.

Mr. Beamish stated that after allowing for depreciation, he would require a profit of 10 per cent.

With regard to the bonus, it was agreed to recommend that the minimum production should be 50,000 lbs. weight, for which the bonus should be £200 per annum, with 1d. per lb. for anything over the 50,000 lbs.—no bonus to be given for anything under 50,000 lbs.

It was arranged that the Commission should recommend to the Government the advisability of giving special facilities in the way of railage, as proposed in Condition 2 of Mr. Beamish's proposal, and would also use their influence in securing free grant of land for factory, as requested in Condition 3.

Mr. Hatton explained that he represented a large Coast House who were fortunate in being associated wth Mr. Beamish in another business, which the latter had started successfully, and that they were prepared to give Mr. Beamish every reasonable support in this new venture.

Mr. Meiring explained the main objects the Commission had in view, which were to help and give relief to as many as possible of the people who were suffering from the effects of the War, by creating for them a means of earning a livelihood.

Mr. Beamish understood that it was the desire of the Government that as many white people as possible should be employed, and stated that on principle he would keep this in view as far as possible in the employment of labour.

Mr. Beamish agreed to embody the whole scheme as now arranged in a letter addressed to the Commission.

APPENDIX VI.

AGREEMENT WITH MR. H. H. BEAMISH FOR PRESERVING FACTORY AT PARYS.

H. H. BEAMISH, ESQ.,
Farmers' Agency,
Bloemfontein.

Sir,

I am instructed to inform you that Government has authorised a bonus being offered you for the manufacture of Jams, Canned, Evaporated, and Sterilized Fruits or Vegetables, Pickles, Chutneys, Sweets and Biscuits, on the following terms:—

1. Not less than 50,000 lbs. weight of all or any of the above articles must be manufactured annually in order to earn the bonus. The period will be calculated from the time the factory commences working as notified by you and certified by a Government representative.

2. The bonus will be given for five years and will be a sum of £200 annually for a production of 50,000 lbs., and at the rate of 1d. per lb. annually for any quantity manufactured in excess of 50,000 lbs.

3. The goods produced by you will be inspected by Government, and if passed, will be stamped with a Government stamp. No goods except those stamped will Court towards earning the bonus.

4. No bonus will be given to any other manufacturer producing the above articles in the Vredefort and Heilbron Districts so long as a bonus is being paid to you. With reference to your request that plant and necessaries for use in the factory should be carried over the Central South African Railways at South African Produce Rates, I am unable to give you any undertaking. The Chairman of the Commission will do his best to obtain this concession from the Railway Authorities.

I have the honour to be, sir, your obedient servent,

Your obedient servant,

W. S. COHEN, Secretary.

APPENDIX VII.

EXTRACT FROM REPORT OF MR. B. H. O. ARMSTRONG, A MEMBER OF THE COMMISSION.

JAMS, ETC.

I paid a very interesting visit to Messrs. Shepherd Brothers' Jam Factory at Stellenbosch, and was shown over the whole premises by their manager, to whom I am much indebted for his courtesy. The factory is large and up-to-date, and is exceedingly well equipped with all the latest plant. The number of hands employed varies according to the season; it averages about 150. During the fruit season the fruit is brought in in very large quantities—much larger than can be treated by the factory. In consequence, it is boiled into pulp, and packed away in paraffin tins, hermetically sealed, from which pulp the jam is made later on, when the rush is over. For ordinary tinned fruits the work must be done at once, but as this consists only of vaporizing or sterilizing, it is very quickly done. The capacity of the factory is about 15 tons per diem of jam, though as much as 20 tons has been turned out on occasions. As much as 250 tons of fruit has been brought in to the factory within three days, which will give some idea of the quantity of pulp to be dealt with. Nearly all work is piece-work, and the labour unskilled (with the exception of foremen, etc.), principally Indian coolies and Cape boys. A large number of women are also employed. This firm has discontinued the manufacture of sauces and condiments, which they formerly made, as unprofitable, and now make only jams, comfyts and chutney, in addition to tinned fruits. The jam boiling is done in copper vessels with steam jackets, the fruit having previously been put through a chopping or mincing machine to be cut up. It is then put into tins, which are soldered mechanically, twelve tins at a time passing through the soldering machine on a tray. This machine has a capacity of many thousands a day. The firm has a complete plant for making tins, and imports only the tin plate; the cutting, shaping and soldering all being done on the premises. All their plant, of course, is costly, but can be dispensed with for a small establishment. The opinion I formed is, that it would be profitable in the Orange River Colony to make jams, and particularly tinned and bottled fruits (if bottles can be obtained cheaply enough). Other branches could be added later on. Tins and packages would have to be imported. The plant for a small establishment would not cost more than £500, including boiler. Coloured boys earn on piece-work as much as £3 to £3 10s. a week at Shepherds, so that it is evident that a living wage could be earned by white men and women in this Colony at the same occupation.

APPENDIX VIII.

REPORT BY MR. G. SHAW SCOTT.

JAM MAKING.

The principles involved in the process of commercial jam making are, of course, the same as rule in the old kitchen processes, but to secure uniformity and cheapness of product, a vast number of manipulations and appliances have been devised. These begin with the manufacture of the cans, and attend the

product to the end, and the realization of the commercial process and the uniform production which it assures, involves the employment of large capital and the keenest business ability. Jam making on a small scale, which was once thought feasible, has passed out of sight. It is clear now that, as a rule, the fruit growers' duty to the jam making interest ceases with the production of acceptable fruit, unless individuals or associations can command capital enough to press out the juice. Never use metal vessels, but employ enamelled ware, or

To make jam:—

Weigh out the fruit first, then add ¾lbs. sugar to every lb. of fruit. Gently simmer till all is dissolved, then boil for three-quarters of an hour. The time varies according to the varieties of the fruit. If the fruit is very juicy it would require to be boiled one hour.

JELLIED FRUITS.

A three-cornered flannel bag is best for straining jellies in moderate quantities. It must be strong, and is better for being long, so that the ends may be twisted to press out the juice. Never use metal vessels, but employ enamelledware, or porcelain, or glass for jellies. For each strained pint of juice allow ½ to ¾ lb. granulated sugar. Boil the juice slowly for 15 minutes before stirring in the sugar. It is well to heat the sugar before adding it to the juice. Watch, stir and skim the juice, and never cause it to boil rapidly. Jellies and jame should not be covered until cold. ¼ inch depth of very finely pulverised sugar laid on top of jam or jelly will effectually prevent mouldiness occurring afterwards.

For currants, allow a full lb. of sugar to each pint of strained juice. The fruit for jellies must be ripe, but not over ripe, because then the juice is not so rich. It must be dry when gathered and ought not to be overheated by the sun.

Freshly gathered fruit is much the best for jellies or for jams. Do not let it lie in bulk for long before using. Currants should be weighed with the stems attached. If any fruit requires to be rinsed, do it quickly and dry as soon as possible. Mash some of the fruit of berries, etc., in the pan to provide a little juice to prevent burning, then add the rest, stir frequently and keep gently boiling for 15 to 20 minutes or longer in very few cases. When the fruit has softened enough by boiling, place it in the bag and press out as much juice as can be made to flow. Strain it into an enamel pan, return it to the kettle, bring it to a boil, stir in the heated dry sugar and stir until it is all dissolved. By this time the jelly should be ready to pour into the glasses or forms. If directions have been carried out, the jelly will coagulate on the side of the ladle as it is taken out.

Apricots, apples, quinces, plums, and peaches should be peeled, cored, pips or stones removed, then cut into pieces. Cover with water, boil gently. Strain the juice through a jelly bag, add ½ lb. granulated sugar to each pint of juice. Boil until it ropes on the spoon in about 15 to 20 minutes.

Raspberry Jelly should be made with 1-3rd currants and 2-3rds raspberries. Strong pressure is needed to press the juice out. A net bag made of strong cord could be used outside the flannel bag and the ends twisted by means of a stick; a proper jelly press is better than all. A small quantity of dissolved Wattle Gum or Gum Arabic added to the jelly or jam will give it great consistency.

Currant Jelly may be made without any cooking by simply pressing out the juice, dissolving in it one lb. of crystallized sugar for each pint of juice. Place in jars set out in the sun for two or three days, then cover with ¼ inch finely pulverized sugar and close with paper or other covers.

Fig Jelly is made by washing the figs: place in the kettle just enough water to cover the fruit, boil 20 minutes, strain out the juice, add ½ lb. sugar to each pint of juice. Boil about 15 minutes.

Grapes should be barely ripe. Clean and stem the fruit, cook for a short time till soft, strain off the juice, add 1 lb. of sugar for each pint of juice, boil again for 10 minutes.

The remaining pulp of many kinds of fruit can be used for jam.

CANNING FRUITS.

Sugar is not necessary in canning any kinds of fruit, but is used as a syrup flavouring. A syrup made with 4 lbs. sugar to one gallon of water is sufficient for most purposes. Fruit should be just ripe, sound, not bruised, and quite freshly gathered. Peaches and tomatoes are best when peeled. If first tipped into scalding water they peel easily. Peaches and apricots should be halved and the stones removed. The secret of preserving in cans is this. Decay is caused by minute organisms called ferments or microbes. These organisms cannot live in a temperature above 180 Fah. for longer than a few minutes. If the fruit, vegetable or other substance is submitted to a boiling or steaming temperature for a time sufficient to effectually kill those germs and is then (whilst at the killing temperature) sealed up so closely that fresh living germs cannot gain admittance, then decay and putrefaction cannot take place until some time after the sealed vessel has been opened and exposed to the air. The air is loaded with germs of all kinds, including those of moulds, mildews, ferments and others. Therefore, canned fruits, etc., must be used within a reasonable time after being opened or they will spoil. If fruits are boiled until they become of the consistency of cold glue as used by carpenters, that jam will keep good for years, even though no sugar may have been added. To preserve fruit by canning it should be boiled in thin syrup as before stated, the syrup is added for flavouring and is not absolutely necessary for the preservation of the fruit) for periods ranging from six minutes up to half an hour. When the fruit has been prepared for canning, place it in the jars, etc., fill up with the syrup (which may be nearly boiling). Place the cans in a boiler with hot water nearly to the top of same; bring the water in the boiler to a boil, and let remain (according to the variety of fruit) for the time mentioned. Then fill up with boiling syrup from a vessel kept close by for the purpose, close the jar tightly and seal down. When glass jars are used, a folded cloth or some slats of wood or straw should be put on the bottom of the boiler and between the jars to prevent breakage. A paraffin tin with one side removed makes a good boiler for small lots, and two of these can be used on an ordiary stove. When self-closing jars are used, the top is usually sealed by pouring melted beeswax or a composition of some kind to fill up the circular rim. Glass jars are provided with rubber rings and a means of pressure, either a clamp wire or screw cap.

When cold, the cans or jars should be stood upside down for about 24 hours, and if any leak is found the work must be done over again. Another mode of testing consists of taking the jars or cans when they have cooled down and standing them upside down in the water in the preserving boiler. The water is

then heated, and bubbles will issue from any leaky jar or can. Where glasses are used, the vessels should be stood in a boiler of cold water nearly up to the neck; bring the water to a boil by the time the fruit and syrup are ready to put in, and after sealing, leave the jars in the water until cold. Put straw or a folded cloth at the bottom of the boiler to prevent the glass from cracking.

There are difficulties in canning peas, beans, and several other vegetables, they are better cured by drying in an evaporator. If canned, use a good lot of salt and cook it longer.

TABLE FOR BOILING FRUIT FOR CANNING.

	Time to Boil Fruit.	*Sugar to Quart Syrup.*
	Minutes.	*Ozs.*
Apricots (halved)	5	16
Apples, Acid (quartered)	10	6
Blackberries	6	6
Cherries	5	6
Currants (ripe)	6	8
Grapes	10	8
Peaches (halved)	8	4
Peaches (whole)	15	4
Pears (halved)	20	6
Plums	10	8
Raspberries	6	4
Rhubarb	10	10
Strawberries	15	10
Tomatoes (peeled)	20	No sugar

NOTE.—With regard to the pears, this applies only to the best kinds.

Tomatoes. Use a little salt, say, 3 ozs. to the quart.

CRYSTALLIZED FRUITS.

The manufacture of crystallized fruits is a simple matter, while the expense of preparing them is small. Of the various fruits best adapted to this purpose, peaches, pears, plums, cherries and currants are most generally used, and are prepared as follows:—

Stone the peaches, plums, etc., by making a small incision in the side, through which the stone, etc., is slipped. Pare and quarter. Weigh, and allow an equal quantity of best white sugar. Make a rich syrup, adding one small cup of water to each lb. of sugar. Boil for a few minutes together, then add the fruit and cook gently until clear, but unbroken. Remove carefully on to a wire strainer and let it stand about an hour, or until perfectly cold. Then sprinkle well with powdered sugar and stand the strainer on a dish in a moderately warm oven for two hours. At the expiration of that time, turn the fruit, sprinkling as before with the sugar, repeating the process until the juice has quite ceased to drip and the outside is dry and crystallized. It is then removed from the oven and allowed to get perfectly cold before being packed away in small boxes between layers of waxed papers. Thus packed away and stored in a dry place it will retain its perfect condition for an indefinite length of time. Care must be taken not to overheat the oven, the exact amount of heat required being ascertained by experimenting, since too great a degree of heat will change a delicious sweetmeat into the toughest of leather.

BOTTLING FRUIT, VEGETABLES, ETC.

Success in bottling depends upon the destruction of every germ by sterilizing at a temperature above 155 Fahr. and the exclusion of air from the bottles.

The sealing of the various kinds of air-tight bottles is similar in principle. In every case a rubber ring is placed outside the bottle mouth, and a cap or stopper rests on the ring and is pressed down into an air-tight position while the bottle and its contents are hot, and enveloped in steam in a sterilizer.

The best bottes for the purpose are The Automatic Patent Cover, and Robertson's Patent Jars for Fruit, Jams, etc. These bottles, when used and closed in the sterilizer, will preserve their contents for an indefinite period with a minimum of labour and expense. They should, as soon as filled, be placed in the sterilizer for 10 minutes at a temperature of 160 to 180 Fahr. This will close the bottles, and the fruit, etc., will keep for years without mouldiness or dryness.

TO BOTTLE AND PRESERVE FRESH FRUIT.

Wash the bottles and fill them with fruit and water or syrup (if syrup be used instead of water, make it with loaf sugar, using half a pound or more to a quart of boiling water until dissolved—the excessive use of sugar deprives fruits of their real flavour and lessens their food value).

DIRECTIONS FOR ROBERTSON'S PATENT JARS. DIRECTIONS FOR JAMS.

After the jars have been washed, place rubber bands in position near the top of the rim, next fill the jars to about 1 inch from the top, then place the cover on as level as possible. If removed again, take care the band is not displaced. Then slip the screw clip on with the left hand, insert wedge with the right, screw down tightly and steam in sterilizer for 10 minutes at a temperature between 160 and 180 Fahr.

FOR STERILIZING FRUIT, ETC.

When the jars are filled with fruit which requires sterilizing, proceed as above, place the jars in the sterilizer with a clip and wedge on just tight enough to keep the cover in position. Then proceed with the sterilizing; after the highest required temperature has been obtained, namely, 160 Fahr., tighten the wedges with the screw, then finish the sterilizing process, which will take about 2 hours, clips and wedges not to be removed until bottles are cold.

PATENT AUTOMATIC AIR-TIGHT COVER JARS. DIRECTIONS FOR JAMS, ETC.

Place the filled bottles closed with rubber cup and screw into the sterilizer, and heat to required temperature. The rubber ring should be moistened in warm water before being used. When the bottle is again cold, remove the clips and the package will be found to be hermetically sealed. The bottles should be warmed before being filled with hot jam, etc., so as to avoid breakage. The springs can be used many times, and should be kept in oil or greased to prevent rust.

If bottled fruit be intended for commercial purposes the bottles must be closed at a temperature not exceeding 160 Fahr., or the fruit will break and be unsaleable.

To secure the best results obtainable, the fruits must be fresh, of the best quality and not over ripe, nor must it be overcooked. Soft fruit like strawberries should be bottled the day they are gathered.

Fruits bottled with the sterilizer will keep for years without their natural flavour being impaired; stone fruits are enriched in flavour by the fine aroma which the stones impart to the contents of the bottle. In bottling fruits, etc., by this method there is a saving of time, money, and labour, without the risk of disappointment through mould, fermentation, dryness or crystallisation, and fresh fruit is provided for winter.

Store in a dry, cool place.

VEGETABLES, ETC.

To bottle Tomatoes, Scarlet Runners, Peas, Asparagus and other vegetables, prepare them as for cooking. Fill the bottles with vegetables and water. Then proceed as with bottling fruit.

EVAPORATING FRUIT.

Apples.—The method of preparing apples to be evaporated is as follows:— First, pare, core, and slice, they are then placed in a dish of perfectly clean water with a small quantity of salt, which prevents discolouration. All bruises, specks and parings are then trimmed away and they are cut vertically to produce the well-known apple rings of commerce. Then place thinly on a tray and put in at the lower end of the upper flue. Sometimes a little sulphur may be sprinkled on the furnace with great advantage for the purpose of bleaching the rings. The first tray remains in the position just mentioned until the second tray is ready, which will be in four or five minutes, and is then placed under the first tray. The third tray is then filled in the usual manner and placed under the second tray, and when the fourth tray is ready it is placed under the third in a similar manner, and so on until the top flue is full. On arrival of the first tray at the upper end of the flue, the contents are examined, and those that are sufficiently dried are removed, and the remainder turned over and returned down the lower and cooler flue. In many cases one tray will hold the whole of the partially dried contents of two or three trays, the empty ones being taken away to be again filled with fresh fruit. The degree of heat used for drying apples is from 175 to 240 Fahr., and the time occupied varies from 2 to 4 hours, according to the variety of the apple, but from 2 to 2½ hours is the usual time. Whole apples require a much longer time, 8 to 10 hours according to size and variety.

Plums are dried in the same manner as apples, except that they are placed in the evaporator at once, they should be graded according to size and should be uniformly ripe. During the process of evaporation, plums ought to be removed from the evaporator once or twice, for the purpose of cooling them and toughening the skins, and so prevent bursting, which they are liable to do, because the skin does not allow the moisture in the fruit to freely escape when first placed in the machine. As soon as the plums commence to shrivel, all danger of bursting is past and they may then remain in the evaporator until dry. The time required for plums is from 6 to 10 hours, and the temperature requisite 240 to 300 degrees Fahr. Plums may be steamed for a few minutes and then split in half, thus entirely dispensing with the cooling process and considerably reducing the time required in drying. 100 lbs. of fresh plums will give about 30 lbs. dried fruit.

Apricots are simply cut in two, the stones taken out, and the fruit then dried just like apples, at from 240 to 250 Fahr.; they take from two to three hours to dry. From 100 lbs. fresh fruit 10 to 12 dried will result.

Peaches should first be peeled and then treated similary to apricots; temperature, 200 to 212 Fahr., and 2 to 3 hours to dry.

Pears for drying purposes ought not to be quite ripe. They are peeled, and either dried whole, but more generally are divided, and the seed vessels cut out and the stems left on. They then require steaming for 8 or 10 minutes, and are filled in from the bottom upwards. The temperature used is 212 to 240 Fahr., and the pears will take 5 to 6 hours to dry if divided, or 7 to 9 hours if whole. From 100 lbs. of fresh pears 12 to 16 lbs. of dried ones will be obtained. When preparing the pears before drying, the flavour will be improved if a little sugar be added to the water in which they are cooked, and to this may be put the juice of the removed seed vessels and peelings.

Cherries should be as ripe as possible before drying. They are, generally speaking, not stoned first, but only the stalk is removed. Sometimes it is preferred only to remove the stalks after the cherries have been dried for some little time, so as not to let the juice escape. The trays are filled in from above, as if put at once in the strong heat of the lower part of the frame the skin of the fruit would be split and the juice flow out. The temperature required is 212 to 220, and from 4 to 6 hours is necessary to complete the drying. 100 lbs. of fresh cherries will yield 25 to 26 lbs. of dried fruit.

Damsons will come under the same heading as regards treatment as cherries.

Strawberries.—Such fruit as strawberries can quite easily be dried and they retain their flavour satisfactorly. They are filled in from above just as with cherries. They require drying for 4 to 5 hours at not too high a temperature, say, not higher than 140 Fahr.

Figs ought to be placed in the Evaporator at once, and treated the same as plums, but without the cooling process.

Vegetables.—As previously noted, these all require, in addition to the peeling, slicing, or cutting up, to be steamed or cooked from 5 to 7 minutes before they are dried. This is necessary in order to keep their colour, and to prevent their becoming hard. When dried on a small scale, the cooking in boiling water is generally sufficient. In factories, and where dried on a large scale, the regulation steaming apparatus is used. Like apples, vegetables are always filled in from below upwards.

French Beans.—These are cut into strips and cooked for a few minutes, a little soda added to the water helps to preserve their bright green colour. Time required for drying, ¾ to 1 hour. Temperature, 150 to 160 Fahr. 100 lbs. fresh beans will give 10 to 12 of dried.

Peas require simply shelling and a few minutes' cooking. They should not be quite ripe and are laid thinly on the trays and will take 1 to 1½ hours to dry. Temperature, 212 to 220. 100 lbs. of green produce will yield about 10 to 12 lbs. of dried peas.

Cabbage.—With cabbage the mid rib of the leaf is cut out, and also the thicker ribs when they occur. The cabbage is then cut up, cooked, spread thinly on the trays, and dried as usual for about 3 hours. From 100 lbs. of green stuff about 7 lbs. of dried cabbage can be got.

Red Cabbage must be cooked only for a very short time or it will lose its colour.

Cauliflowers.—These are broken up into single pieces or lumps, cooked for about 5 minutes, and dried like cabbages. They often get a brown colour in drying, but on cooking again the white colour reappears. From 2 to 3 hours is required for the drying. From 100 lbs. of fresh heads of Cauliflower about 4 to 5 lbs. of dried will be obtained.

Carrots are cleaned, scraped, cut into slices of about 1-8th of an inch in thickness. After cooking, they are spread lightly on the trays and dried from 3 to 3½ hours. 100 lbs. of the fresh vegetable yields about 8 lbs. dried carrots.

Celery is cleaned, peeled, and cut into strips 1-8th of an inch thick. It must be cooked until halt sott ,and then laid on trays just like apple rings. The drying takes from 3 to 4 hours and from 100 lbs. of fresh Celery about 4½ lbs. of dried can be got.

Onions.—The peel is removed and they are cut in slices about ¼ inch thick. They take 3 or 4 hours to dry. From 100 lbs. of fresh Onions 10 to 12 lbs. of dried Onions may be obtained.

Potatoes.—After washing and peeling, the potatoes can be cut up into slices or strips. When putting them into boiling water before drying, it is well to add some salt to the water. They will dry in 2 or 3 hours at a temperature of from 200 to 212 Fahr.

CEMENT.

EVIDENCE OF MR. MAXIMILIAN GOTTHARD.—4th June, 1904.

Q. 1. We want some information on the manufacture of cement and the possibility of manufacturing it in this country at a profit? Well, of course, the first thing to ascertain is whether actually such raw material exists in the country which would make it possible to make a good cement. My experience in this country is this, that only the very best brands are imported here, and if you start a factory to supply the demand in this Colony and in the Transvaal and perhaps the other Colonies, the first thing will be to make a cement which will compete in quality with any imported cement, or it will be from the beginning a failure; that depends not only on the management of the factory itself, but first of all on the raw material, and it will have to be ascertained whether such raw material can be found in this Colony, and whether the deposits are large enough to warrant the expenditure of perhaps fifty to sixty thousand pounds to put up a factory.

Q. 2. From your experience do you think the material does exist? From what I have seen of the limestone of the Orange River Colony I must say it does not exist. Very often I have had samples of lime through my hands which came from the north of Bloemfontein, and it is much about the same lime you get at Kimberley and from the Transvaal. It is very uneven, mixed with sand more or less, and that would not allow of making cement of it.

Q. 3. What is the objection; it has to be washed I presume? The sand in this lime is very very fine, and it would be very difficult to wash it out of the lime. The silica must be absolutely dissolved by the process of burning—must be made chemically active with the lime and alumina, so as to allow the silica and the lime to form a double silicate. If you have the silica in the form of sand in the lime, the sand will not be affected enough by the burning and your chemical test will show you that you have a certain percentage of lime and a certain percentage of silica, and in the clay you will have a certain percentage of clay and silica, but that would not immediately show you whether the silica is soluble or not or whether it exists as sand, and if you reckon this sand as silica in your composition and the silica is not made active by the burning, then it does not work.

Q. 4. You mean the quantitative analysis would not show that there would be something deficient? Yes. You must be very careful of the raw material before going in for a big venture like that. Even if a chemist was of opinion that it was all right, practical working might show otherwise. That is why I say this is the first thing that must be gone into very carefully.

Q. 5. The best test would be to manufacture a small quantity of cement? That is not necessary. I could get samples of the properties which you think would be suitable, and go into the matter to see whether they are suitable.

Q. 6. You prefer the limestone to the free lime? It is not a free lime what I have seen so far, it is a sort of chalk mixed with sand. I have had samples of this at different times. The higher parts showed about 30 per cent. of silica. Going deeper down three or four feet it showed about 50 per cent., and went up to 70 per cent. going deeper down, the sand being heavier. The lime itself was in solution in the water, the sand has been brought down by the water at the same time, and the sand has settled down. The very light lime has settled on the top, and in some places you find a settlement of lime about 2ft. thick, nearly pure lime, but you could not get it in sufficient quantities, and this material could not be worked for making cement. I understand other limestone has been found in this country.

Q. 7. Have you seen a sample of limestone from Ventersburg Road? We were discussing this matter with Mr. Wall and Mr. Price, and he was very much interested in this limestone, and considered that in all probability they had found something which would make a good cement.

Q. 8. Is he a cement maker? No, he is the chief engineer of the Railway. Yes, it is wonderful how people form ideas about things which are really problems, and how often one hears of this or that which would make a good cement. Dolamite contains about 50 per cent. of carbonate of lime and 48 per cent. of carbonate of magnesia. Magnesia should never be in cement. If it is not possible to find a really good deposit of limestone, you could never start a factory. On the other hand, I should say it would be very necessary, and very useful to go into the matter to find out if there are really any deposits which would be suitable to take into consideration to start a factory. The quantity is as important as the quality. If you had not sufficient in two or three years the whole thing is blown up.

Q. 9. Can you give us any idea of the cost. That depends very much on the output. The bigger the output, the very much more the cost of producing is reduced. I should say that a factory producing less than about 60,000 casks annually should not be started at all. I understand that the O.R.C. would certainly use about 20,000 casks, and the Transvaal would use about 100,000 now. Of course, in the Transvaal there is the Pretoria Cement factory. They put out about 50 or 60 thousand casks now. Their raw material laid down at the factory costs them about 25s. a ton, which would cost a factory built on the proper place about three or four shillings.

Q. 10. I understand they get their stuff by road. Yes, by ox waggon from a distance of 20 or 25 miles. The factory was at the time started under a concession, and under very heavy protective duty.

Q. 11. For 60,000 casks a year what would be the cost of the plant? I should say about 40 to 50 thousand pounds, including buildings and everything. You would need to have the very latest improvements.

Q. 12. We would require something for working capital in addition? Yes, You would get your returns quickly, most of your sales would go to the Government and other places where you would get your money readily.

Q. 13. What labour do you require? Well, mostly native labour, unskilled. In a factory there might be 10 or 12 good white men, all the others would be natives.

Q. 14. What makes the price of machinery so high? It is very heavy machinery, the latest revolving ovens, grinding machines, are very expensive.

Q. 15. Do you know what the cost of production is at Pretoria? Yes, it used to be about 16s. a cask, not including the cask; with the cask, about 20s. If you had an output of 60 or 70 thousand casks annually, the expenditure would be very heavy, and you must have a very good man at the head. He will command a very good salary. With a small output it would be a big drain. You must have a practical, chemically educated man.

Q. 16. What do you think we could do to help most in starting; in some of the industries we have been recommending bonuses on production. I don't think that would help much in this case. It takes too much money. I think the first thing to do is to find out whether limestone could be found for the purpose.

Q. 17. Could you help us in that? I am a very busy man, but if you could find out where there are deposits, and anything further regarding them, I would be prepared to go over the grounds. If you could get the information it would save my time and expense a good deal.

Q. 18. If we could get hold of several likely places and send you samples? Yes, I would go into the samples and let you know if I found indications, and if I thought them suitable I would go out to these places and go into the matter, and see whether the quality and quantity is really there, or what quantities might be expected.

APPENDIX IX.

LETTER FROM MESSRS. ALFRED KEMPERLING AND CO.

Sir,

I have to thank you for your esteemed favour dated the 24th of June, which only reached me on the first of July owing to its being incorrectly addressed. I am very much obliged to you for your readiness to encourage the manufacture of Cement in the Orange River Colony, but am afraid that the encouragement which you are prepared to recommend to the Government, viz., a bonus of £1,000 for one year will not be sufficient to induce the capitalists in question to invest their money.

What you said about the existing protection consisting of a preferential rate on South African Railways amounting to more than 10s. per cask is perfectly correct and there is no question that the factory will pay, if it is possible to turn out a first-class Cement from the beginning. Now, examples have proved it that even if highly suitable raw material was used, the difficulties in producing a first-class cement when starting a new factory were invariably very great. We do not see the risk in the difficulty to dispose of the Cement, but to make a first-class Cement from the beginning it will be necessary to

engage a scientific man in Europe who will have to find out the right proportion of mixing lime and clay. It takes a very long time in most cases to find out the right methods how to treat the raw material which can only be fixed by experimenting again and again. It might also be found necessary after some time of practical working to replace some parts of the machinery by more suitable ones or to rebuild the kilns, because it is very difficult to choose the right machinery in every respect only judging by a ton or two of raw material. What loss it would mean to the undertaking if the working had to be suspended until such alterations would be accomplished is easily perceivable.

I beg to mention that there are not two Cement factories in the world working under the same conditions as regards raw material and therefore even the most able expert has to build up his methods on the result of empirical theories and might easily be mistaken. In fact the Cement Factory at Pretoria is working without a profit and they do not seem to have found the right treatment of their raw material yet, as their Cement turns out very irregular indeed.

In consideration of these facts, I feel sure that without more substantial subsidies from the Government it will not be possible to raise the money for erecting the factory, although the raw material available on Zeeland has been found exceedingly suitable by Continental experts. The cost of bringing out absolutely first-class experts will be enormous and a considerable time might elapse ere the factory is in such a working condition that every cask of Cement produced turns out equally in a perfect quality.

I therefore ask you to kindly go into the matter again, and to consider the advisability of recommending to the Government a subsidy of £1,500 yearly for a period of five years for a production of not less than 20,000 casks of 400 lbs. per annum.

Hoping to hear further from you on the subject,

I have the honour to be, Sir,

Your most obedient servant,

ALFRED KEMPERLING.

J. H. Meiring, Esq., M.L.C., Etc.,

Chairman of the Industrial Commission,

Government Buildings, Bloemfontein.

EVIDENCE OF MR. SILBIGER ON THE MANUFACTURE OF ASBESTOS, SILBESTOS, XYLOLITE, ETC.—5th May, 1904.

Shows samples of Silbestos and Asbestos Slate. Asbestos Slate, 3s. 9d. per square yard. Silbestos, 6s. 6d. per square yard. Shows block of Silbestos 3ft. 3in. square, and explains that it was of a perfectly uniform thickness and strength throughout (about half an inch thick), attention being called to the special strength and unbreakable quality of the material.

It is as far as we know the best non-conductor of heat, cold, humidity, sound and electricity. It can be made in any colour desired.

(Shows specimens in slate colour, sandstone colour, white and pink).

When the houses are built these blocks have the appearance of stone, the edges being bevelled to give this appearance. Three inches is the whole thickness of the wall.

Q. 1. What would be the difference between the cost of a house built of this material and one built of brick. At present roughly stated it would cost 1s. per square foot less than brick, but the appearance would be very much better. When finished it looks very like marble.

Mr. Silbiger explained that he had had a joint visit from Chiefs of the different Departments: Mr. Price, Mr. Hoy, and his assistant, the Chief Engineer of the C.S.A.R. and the Solicitor of the Company, the Chief of Public Works, Johannesburg, the Chief of Fire Brigade and others, all of whom had expressed themselves in the highest terms with reference to his invention, and that permission had been granted him to erect houses in any part of Johannesburg he desired.

The walls of houses are built 3 inches thick, the centre layer of wood or frames of iron, with a lining outside and inside of Silbestos. In this way it is absolutely fire proof; place a fire in the inside and another at the outside at the same time, in two hours time the timber will be absolutely unaffected by the fire; the walls will not have shrunk or cracked in any way. I have built a house in Johannesburg and sold it to Mr. Julius Jeppe for £1,200. (Shows plan of house).

Q. 2. Did the £1,200 cover the expense? Certainly. I did it for 10s. per square foot. The whole house is built with this material, roofing, ceiling, walls, every part of it. The corrugated iron house is the ruin of this country as it gives really no protection against heat or cold and no comfort whatever to which the European immigrant is accustomed. If I have a factory here you need not import an ounce of corrugated iron to this country. If I can get the raw material here and a factory to manufacture it we could export Silbestos to Australia, to India and to the Straits. You could supply the whole of South Africa with it.

Q. 3. With regard to this Silbestos, how much of the stuff that is required for its manufacture can be found in South Africa? The Asbestos can be

found in unlimited quantities; the other material I could not speak of, but I submit to you a statement of a friend of mine.

(Statement read to the meeting).

Q. 4. How much of this Asbestos Slate consists of Cement? 15 to 25 per cent. is Asbestos, 75 to 85 per cent. Cement. Silbestos however consists of one layer of Asbestos Slate and a layer of Pure Asbestos Mill Board.

Q. 5. Have you an agent at present in Cape Town? No. I have not done any business there yet. It is quite impossible for anyone to understand until they see what can be done. My house in Johannesburg looks like a marble palace. I make not only these blocks but am able to make water pipes and sanitary pipes. The material is stronger than these earthenware pipes which are sent from home.

If you were to put Asbestos Slate in for three days in a boiler, then put it in a fire for an hour, after an hour you take it out it will not have expanded, or cracked, then throw it into cold water, it will not contract.

(Shown sample of Xylolite (red) used for flooring kitchens.)

Instead of Xylolite, Asbestos Slate, in proper thickness, can be used for flooring. In the manufacture of Asbestos material there is a powder left which we call Asbestos Powder. From this we can make Asbestos Paint which is used for covering timber. There is a large quantity of this imported, costing about 30s. a ton. I may mention that South African Asbestos has a short fibre and is not good for exportation purposes, but for Asbestos Slate and Mill Board it is very good.

A house of four rooms, 10ft. x 10ft. I could build for £200; a larger house proportionately more expensive.

Q. 6. How are these slabs fastened to each other? They are simply nailed down to the timber or screwed on to an iron skeleton. As I have to pay 6s. 9d. per 100 pounds weight from Durban, I make them as thin and as light as possible, but if I were making them here I could make them considerably thicker and consequently far stronger.

Q. 7. Is the machinery you require for this very expensive? Yes, in order to get the pressure.

Q. 8. Do you make your own Cement? That is my aim. If they make Cement in this country and considering that asbestos is to be had in unlimited quantities, I am sure we could manufacture in this Colony for exportation three to four hundred thousands pounds worth of Asbestos Slate and Silbestos and not an atom of corrugated iron need come into the country. I would sell it at the price of corrugated iron. It is much better than iron, and there is no reason why I should not get as good a price for it, although it does not cost so much. I may mention that Mr. Julius Jeppe has taken up the matter, and that any further proceedings in the matter would have to be negotiated through him. In the meantime I have

Mr. Silbiger—[SILBESTOS.]

to bring Asbestos down from the south coast of Natal, and partly from Zululand. Here, if I have encouragement, there would be more of a centre, you have Cape Town, Durban, Kimberley, etc., and both materials are on the spot. The industry would give employment to hundreds.

Q. 9. Could you employ white people? Certainly, 25 to 50 white people, unskilled people. In connection with the erection of my house at Johannesburg, I brought out a foreman to work it, but he had only been there a few days when he had to go to hospital, and I had to teach the whole thing myself. I had to teach them how to prepare the work, how to plane, how to erect, every mortal thing. Now this house has been erected. Four weeks ago we commenced excavations; this Saturday it is perfectly finished.

Q. 10. What encouragement would you expect from the Government? I have nothing to ask. I have given my patents to Mr. Julius Jeppe, and you would need to negotiate through him.

Q. 11. How long will it take to erect a house? A fortnight or three weeks it will be finished. I have in stock plenty of material—15,000 square yards, enough for 15 large houses.

Q. 12. What do you think of the bonus principle—so much on production? We would be most grateful for that.

Mr. Meiring explained that in order to fix a suitable bonus to be offered, it was necessary that some idea should be given of the cost of production, first erection of machinery, capital and labour employed, and Mr. Silbilger agreed to submit this to Mr. Jeppe on his return from Mafeking.

Q. 13. What do you think would be the initial cost of the plant required? £15,000, to make 2,000 square yards a day.

Q. 14. Does that include the plant for making the Cement? No, that would be about £10,000 to turn out, say, 60 barrels a day. I cannot import Cement inland on account of the heavy freight.

Q. 15. Do you use Transvaal Cement now? No, I have not manufactured here at all yet.

(Shows illustrations of houses built in Austria of Asbestos Cement.)

Q. 16. I just wish to know besides the £25,000 which is the actual plant, what the labour would cost to produce 2,000 square yards per day? It is a secret of Julius Jeppe. He will submit the prices to you. The labour is the principal thing—the material is nothing.

Q. 17. How many people could you give work to? 200 at once; about 30 or 40 unskilled whites, and the others Kaffirs, to turn out 2,000 square yards per day. I take black men at 5s. a day. I may sell this at 6s. 6d. a yard just now, but later on I shall sell at 4s.

Q. 18. How much do you estimate for unskilled men? 15s. a day for unskilled whites. I have taken coolies at Durban at 6s. a day. Mr. Jeppe will send you my original statement.

Q. 17a. How much cement do you require to make 2,000 yards? I require 16,000 lbs. a day—40 casks.

Q. 18a. When you say you could make 2,000 yards per day that is not including cement? I cannot give you the cost of labour in cement, I don't know about that. That would take 50 men more, and three or four white men. You would need to find about £50,000 of working capital to start with; that would leave about £5,000 to spare for the initial cost of the Asbestos. I am told that they have excellent material here for cement in the Kroonstad district. For a house 10ft. x 10ft. x 10ft. I would require 500 square yards. If Cape Colony, Orange River, Natal, Rhodesia required every day two houses, that alone should amount to a big turn out. My material will last much better than corrugated iron. At the Coast iron will only last about seven years, although here it may last for 20 years. This material, the longer it is exposed, the harder and stronger it becomes.

Q. 19. How long has it been going? Five or six years.

Q. 20. How are the houses standing wear? To perfection.

(Mr. Silbiger promised to send photographs of buildings at different stages of construction.)

TOBACCO.

EVIDENCE OF MESSRS. JOHN AND PHILIP BOTHA.—5th March, 1904.

Q. 1. How long have you been growing tobacco? I have been working with it since I was a boy, and have been growing it in Vredefort for 30 years.

Q. 2. How much do you grow altogether in a year? About 300,000 plants—about ¼ lb. tobacco is obtained from each plant.

Q. 3. How many acres does it take for that? Eight morgens.

Q. 3a. You get a lot from one morgen? About six to eight thousand lbs. from one morgen.

Q. 4. How many people to work a morgen? About four people.

Q. 5. What price do you get on an average? On an average about 9d. a lb. I sell the whole crop for 9d. a lb. To sell it cured I would need to get 1s. a lb.

(Specimen of Tobacco grown in Vredefort shown. Tobacco examined when Messrs. Botha explained that white streaks were traces of saltpetre, indicating good quality of tobacco).

Q. 6. Do you water the tobacco much? I do not give it much water—perhaps in very dry weather, once a week.

Q. 7. Does it grow regularly on the same land? Mostly on the same ground.

Q. 8. Do you put on any manure? I do not give it much manure—very little—only ox dung, sheep dung is not so good; it turns black if you put on sheep dung.

Q. 9. Do you change your seed regularly? It is better to change the seed.

Q. 10. How is your tobacco cured? It is cut when it is ripe. Two plants are put together and hung up in the sun to dry. They are then put on a sort of platform to allow the air to get through, and stacked up right to the roof. A shed might be eight feet high, sixty feet long and twenty feet wide. If I find the stacks are a little too moist I unpack them again. Sometimes the ends get a little moist. To sweat the tobacco it is put into clean water, rinsed through once or twice and put into heaps. If you want the tobacco to be good it must not be put into too large a heap. For rolling tobacco you have to make only small heaps of two or three thousand lbs. I do not sweat them long, perhaps one night, and the next day they are ready. I do not allow the stacks to become too hot. As soon as I see this I open them up to allow the air to get in. If they sweat too much, the tobacco gets dark in the colour. People like the lighter coloured

tobacco, and that is the reason they are put into small heaps. It is all rolled by hand. Down in the Colony they use machines costing about £110 or £120.

Q. 11. If there were a good factory in a central place, would you prefer to sell your tobacco standing, or to cure it yourself? I would prefer to sell it to a factory if I could get an even price.

Q. 12. Could you increase your production? I could grow very much more if I could sell it to a factory. I could put on more hands to work.

Q. 13. Have you plenty of good land with water? I live near the Vaal River, and can get water to grow any quantity of tobacco—I would be quite pleased to see a factory. I am sure the other farmers would be quite pleased to increase their production if they could get a market for it.

Q. 14. What price would pay you to grow tobacco to sell to a factory if you just sold it growing? I could not do that—it must be dried on the ground.

(Explained that the tobacco leaves shown were unsweated).

Q. 15. At what price could you sell that specimen? Perhaps at 9d. a lb or a little less. Cut tobacco I could not sell for much less than 1s.

Q. 16. Where is your farm? At Rhenosterpoort, on the red ground. All the red ground is good for growing tobacco.

Q. 17. What sort of shed do you use? It is quite an open shed with a thatched roof. My shed is 96 feet long, 30 feet wide. Mr. Philip's, 110 feet long, 40 feet wide.

(Shows specimen of rolled tobacco—rolled by hand—considered a good colour).

Q. 18. Are the bundles all made the same size? Some are a liftle larger—the natives sometimes make them larger—from two to four lbs.

Q. 19. When is the seed planted? The seed is put in on the 20th of July. The tobacco is transplanted between October and November. In January or February, or perhaps March, it is ripe for cutting. After it is cut we get a second crop which is ripe in April or May. The second crop is not so good as the first crop, but you can get almost the same quantity. The tobacco does not ripen evenly, but we cut it as it gets ripe.

Q. 20. Is it all the same kind of tobacco—cut and rolled? Yes.

Q. 21. How do you cut it—by machinery? I have two machines at Vredefort (machines something like a chaff-cutter), I also make some cigars. I knew a Dutchman who sent some cigars he had made to President Steyn, which turned out splendidly.

Q. 22. Where did he get the leaf? He used this same leaf, but it is rather thick.

Q. 23. If there was a factory could you grow tobacco suitable for cigarettes? Yes. It would pay me to grow it if there was a market for it. Supposing I do improve the quality of seed—it often gets mixed up with the previous year's seed and falls back to the old quality.

Q. 24. How do you choose your seed? I change it about. Some of the people have grown Indian tobacco. The leaves are very small and thin and very much shorter. It would do for cigarette tobacco.

Q. 25. Do all the farmers round about you grow tobacco? It is the chief thing in the district. I think it would certainly be an advantage if the Government would distribute good seed.

Q. 26. Where do you think would be the best place for a factory? It would be better to have it near the fields, as the leaves would break if they had to be carried too far. It would be alright if they had not to be moved too often.

Q. 27. You have to collect the tobacco from the fields? You buy it on the farm, and the farmer will bring it to the nearest station. I sold a lot to Johannesburg. Most of my tobacco is sold to the people of Vredefort who send it away, getting 1s. a lb. for cut tobacco.

(Mr. Philip Botha corroborated his brother's statements, explaining that the two farms were adjoining).

EVIDENCE OF MR. SHAW SCOTT.—February 27th, 1904.

In the Orange River Colony I think there is very great scope for tobacco-growing, especially near Vredefort, and along the Vaal River. It is a branch that might be increased very much. The people have up to the present time only had small patches, and have not gone into the cultivation of it sufficiently. We have just got out 20 lbs. of tobacco seed, American varieties, which are known to have done well in Cape Colony. These we shall distribute. A portion I should like to have sown on our experimental farm. The growing they go in for here is very primitive. They cut the stalk close to the root, carry it in, taking two lots of tobacco, and swing these over a pole. The leaves ought not to touch, but to stand out. Tobacco ought not to be cut, until covered with yellow pods. They strip the leaves off, and put it into a heap causing fermentation. The fermentation is done in a most irregular fashion, with the result that it becomes decomposed; this is entirely due to imperfect fermentation. The tobacco ought to be dried thoroughly, stacked and restacked all through, so that the fermentation will be equal throughout. In Oudtshorn district some of the most progressive men have been using imported seed very successfully, with the result that we have got some out. I have some seed from the Transvaal to try down here, but I have not tried it yet. The people who go in for it here save their seed year after year, and consequently it deteriorates. We never could grow tobacco equal to Havana, but with care, attention to cultivation, and going more particularly into the drying, there is room for great improvement. I think if sufficient trouble were taken it could un-

doubtedly be grown sufficiently profitably to warrant going in for it. It is not an article that is worth tackling if not gone in for thoroughly. I have had experience in curing, as well as growing tobacco. Tobacco curing is part of an ordinary farmers' operations. The harvest necessitates a very great deal of labour.

Q. 1. Would it be a good thing to have a central factory in a place like Vredefort or Parys? It would be very much better to bring the tobacco to a centre, just as in the fruit-growing. There would be a bigger market for it. I think it would be a profitable industry. If you can get a superior article, it is bound to sell alright. The tobacco factory must not be too far away from the fields. The farmer practically leaves off having anything more to do with it the moment it is cut, as it immediately passes into the hands of the manufacturers. The farmer would take it at once to the manufacturer. I have no idea what the cost of a small factory would be—not very much would be required—simply a drying shed. At the present time in Vredefort there are quite a number of people growing tobacco. This would increase if they had an outlet for their produce. I distributed some seed about twelve months ago to the different Resident Magistrates, and had a letter the other day from the R.M. at Vredefort that it has been very satisfactory indeed. An ounce of seed does an acre of ground.

For cigar making, the leaf must be imported. There is no leaf grown here good enough for the cover. Even for the cheap cigar "Old Boys" you must have a foreign leaf. You can get enough tobacco for the fills. The Cango Factory turn out some very good cigars. Mr. Wallis is the manager in charge there. For a tobacco factory it would be necessary to have an expert in charge. At Oudsthorn they find a very ready sale. There is not a great deal of expense in importing the leaf for the cover; it comes in bales. There is import duty of course. They do not grow any cigarette tobacco here—only pipe tobacco. The factory there has been established for a number of years. There is another tobacco dealer there—Shenck is the name—he came out under the Cape Government. He is making I should say two or three thousand a year out of his tobacco factory. Tobacco can be grown along the Vaal river to perfection.

The tobacco is made up into various forms, principally into rolls of 1 lb. each. The Cango people are turning out some very smart tins. They also make snuff. I have tested the tobacco which I have seen grown in this Colony. In fact the tobacco grown here is better than that turned out at the Cape, owing to the soil. Down there in the Oudtshorn district they have been growing tobacco on the same ground for twenty or thirty years without fertilising. Some of the people grow their tobacco on the old kraals, which imparts a very bad flavour. Tobacco should be grown on a deep soil, with a fair percentage of lime. A tobacco factory would employ in the course of time a very large number of hands. I have no idea what the expense of a building would be. There would be almost no plant required. The plant would be necessary when you began to tin the tobacco, and make cigars, etc.

EVIDENCE OF MR. W. J. WALLIS ON TOBACCO.—11th August, 1904.

(Shows samples of tobacco mannufactured from plants grown in Oudtshorn (Cigarette and Golden Flake Cavendish).

Q. 1. Have you had any experience in growing tobacco yourself? Very little. I have just grown a little in my garden. I was in the Cango Tobacco Factory for seven years. We got certain farmers to grow us leaf for our cigar department and better class cut tobaccos. I have studied the best books I could get hold of as to growing, curing and the manufacture of tobacco. The farmers who followed out my instructions have produced a better quality than the others who have simply gone on their own old way. For the growing of tobacco you want fresh water, sandy soil containing lime. To grow in heavy lands and a blackish soil takes away the natural burning quality of the tobacco. The want of saltpetre in the soil as well as lime would also deteriorate the burning quality.

Q. 2. What is about the proportion of the lime? Not very much, about a teaspoonful to a plant, a fair quantity to give it not only a nice burning quality, but that beautiful white ash. Sheep manures should not be used (except for heavy tobacco for snuffs), they will give a black ash. Green manures, grass or barley is the best.

Q. 3. What about the bone manure? That is rather strong for it.

Q. 4. Do you think that sheep or cattle manure would be better? These are too heavy, except for snuff or heavy shipping tobaccos. The manure must be thoroughly decayed. Tobacco is such an absorbent plant, that unless great care is taken in this, you would smell the smell of cattle manure in the tobacco when smoking. Care should be taken in the rotation of crops. In Sumatra the land that has grown tobacco say this year would not be used for tobacco again for about seven years. A good rotation of crops would be as follows:—

Tobacco, mealies or beans, rice, fallow, rice, beans, tobacco and so on. When growing, tobacco's greatest enemies are hail and wind in South Africa. (I have not seen any sign of the tobacco worm which is a great destroyer of tobacco in America). A good protection against winds is to plant a row of beans between the tobacco plants, say, every 50th to 75th row, and allow these beans to grow to a greater height than the tobacco; this will then serve as a protection against severe winds. When tobacco leaf is ripe it is very brittle and will break easily. Topping the plant is always necessary and if properly done will also serve as a protection for the principal leaves against hailstones. In this country they allow the plant to grow 15, 20 or even 25 leaves. They boast of their tobacco being 6ft. high. The object of topping your plant is to prevent its reproduction, and to send all the strength into 10 or 12 leaves. The next thing to attend to is the suckering. This should be regularly seen to up to one or two weeks before the time for cutting the tobacco. In the country here they cut down the plant perhaps only once suckered. The consequence is that young suckers shoot out again while the plant is hanging up to dry in sheds and the quality is taken out of the leaf. The slow drying process is another help to young suckers which have not been nipped out while the plant was growing in the fields. The suckers are of a very inferior quality of tobacco.

When dry, the sticks are taken down and the tobacco stripped off them. These leaves should be sorted into classes, but the farmers here bundle them all together without classifying, with the result that when the manufacturer gets it he has in each bundle, over ripe, ripe and unripe leaves, which if he were to manufacture into roll tobacco, would last only a few days and then go bad, the suckers in the bunches and unripe tobacco would start fermenting and damage the whole lot.

As for the manuring of tobacco I advocate strongly the use of green manures (vegetable matter). You could take your tobacco stalks, collect them year by year, burn them upon the land and let them return to the soil; thus you would get the required potash for the leaf and more of the combustible matter you require for the tobacco. Green straw, grass or any vegetable matter will give you a superior quality and yield of tobacco than using a heavy manure (sheep, cattle, etc.). As far as the Cape Colony is concerned we have tried about 12 or 14 different kinds of tobacco seeds. It took us three years to find what farms in our district could grow us a good tobacco with any class of seed, then it took us another four years to find out what seed would answer on the different farms.

Q. 5. Do you find farms differ in that respect? Very much indeed, no two of them will give the same results. The best position for a tobacco field is where the sun shines on the plants in the morning. A Western aspect where you get the afternoon sun ripens quicker, but it does not give you the full flavour; you get quite different tobacco from it. If you take imported seeds and set to growing here you do not get the same satisfactory results, but a better quality than from old seed. The farmers would prefer the old seed it being thoroughly acclimatized and less trouble than imported seeds. I have made a note with regard to the results of some of the seeds we have tried. Havana, Sumatra, South Carolina have not answered in our district.

Havana will only grow to perfection in Havana, America has tried it and failed to get good results.

Sumatra: we cannot give it the conditions either of soil or climate whic it gets in its native place.

Of the seeds we find answer best the White Burley is the most useful and from which we receive best results. Its one fault is its aptness to take white rust, when the leaves turn perfectly white.
Connecticut is a finer leaf very good for cigars; Blue Prior is an excellent leaf grown also about Maryland and Virginia. We got very good results from Maryland tobacco. The Yellow Orinoko is an excellent leaf for cigarette tobaccos and answers very well.

Q. 6. What class does the White Burley produce? A heavy shipping leaf, a good manufacturing leaf, broad and large. We took the prize three years ago in Cape Town for leaf tobacco with this tobacco. The leaves were 15 to 17 inches wide, 25 to 28 inches long.

Mr. W. J. Wallis—[TOBACCO.]

Q. 7. Do you supply the farmers with the seed? Yes, we give them the seed free, and we pay them extra for leaves grown from imported seed.

Q. 8. Do you give them fresh seed every year? No, every three years or so. The plant will go on producing every year, but the quality deteriorates. We found that the first year fair quality, second year good, third year not so good and gradually going back in quality year after year.

Q. 9. Would it deteriorate with high cultivation? I do not think it would deteriorate quite so quickly. We cannot give it quite the same conditions as they can give it in their own lands.

Q. 10. Does it require much water? No. Two good waterings are all that is necessary. One shortly after you put it in. You want to give it just a little water in planting; in the watering you do not water close to the plan but at a distance round to allow it to soak down into the roots without hardening the ground immediately round about the plant. The first watering should be given when the plants have recovered from transplanting and the second in about six weeks later or so, greatly depending upon your soil.

Q. 11. Does it require rich soil? No it does not require a rich soil; it wants a sandy soil. Unless you grow tobacco on a large scale it will not pay. I put my plants in about a yard apart from each side. A man ought to get about 50,000 lbs. from 200,000 plants. The cutting is done here very often in the morning, and brought in in the afternoon, carrying in on trolleys, and hanging up straight away from the land to prevent all danger to the leaf as it is so brittle. If you squeeze the leaf it will darken at once. The less handling you give it before it is thoroughly dried after it has been cut the better. You must allow it to lie in the sun to wilt; it is then carried into the house and hung up in an open shed or in a tobacco house which is preferable. The tobacco house at present in the Cape Colony is simply a two sided shed. There is no ventilation except the opening at the top. Any rain coming in is bound to damage the upper tobacco in the shed, as well as heavy dews. You are bound to lose a certain amount in this way, with these sheds. The tobacco houses suggested in America are two, either a hot air house or a house with a ridged ventilation. For light yellow leaf you require the hot air process, for this production you must fix your colour as quickly as possible after cutting.

Q. 12. On what does your colour depend? It depends to a great extent upon the heat in which you dry your plant.

Q. 13. Supposing it were possible you could reap in winter is it only a question of the drying not of the growing? Principally a question of drying. The fifth day in a hot air house will about fix your colour. For cigarette tobacco you want to dry it as quickly as possible. When dry, wait for a damp day, or you can use artificial means by spraying the floor, and then take off the leaves and sort the tobacco into the different grades. The sand leaves at the bottom of the plant will form one class, the top leaves another, and the remainder into four classes, according to quality and length of leaf.

Q. 14. At what stage do you as a manufacturer prefer this leaf being brought to you? If I could possibly get it I would like to get it directly it is cut down, owing to the want of knowledge on the part of our farmers to cure and dry tobacco properly.

Q. 15. You want to have these hot air houses close to the farm? Yes.

Q. 16. It would not be worth having them unless you were a big grower? No. 25,000 lbs. can be dried in a convenient sized house at a time. It takes five days to do that. You cut a certain quantity of tobacco at one time and you are anxious to get it through as quickly as possible to leave room for your next crop. The farmer brings it to the manufacturer when it has been dried. Tobacco drying and curing is the most important thing to watch. Sometimes the farmer brings it into us in a semi warm condition, sometimes nice and dry. We then sort it out into different grades according to its burning quality, etc. We store our tobacco each separately in different heaps from the different farms and in the different qualities.

Q. 17. You have sorters who do that? I generally did that myself. After stacking in these different heaps we have then to sort out and select which is suitable for cigar department and so on, giving it the different processes of fermentation according to requirements.

Q. 18. Do you use a thermometer to regulate the heating? No, I have never used one. You have to watch very carefully, and as soon as it is up to a certain temperature you change it and restack it. When it has arrived at the colour desired you make it up into bundles neatly and tidily.

Q. 19. What is the extreme temperature you let it go to before restacking? Some say 110 degrees, some 120 degrees. It is safer not to drive up to too high a temperature. For the manufacture of cigars it has to go through even greater fermentation. Fermentation helps you to bring out the combustible matter in the leaf as well as kill the germs of microbes or animal life and leaves you a nice fine leaf.

Q. 20. Do you make any tobacco dip? Yes. We cannot always get the same proportion of nicotine from the tobacco from the farmers, with heavy rains you have less nicotine than you would have in a dry season. In making one of our lines of cut tobaccos "Best Leaf." This is made from tobacco grown for cigar department and found too short or not quite up to standard in quality. If the tobacco is rather strong, and we wish to make it milder we put it into water and allow it to lose a good deal of the nicotine and ferment it once or twice until it is nice and mild. We use this water which has absorbed the nicotine in the manufacture of Dip. For Tobacco Dip we get 20s. per drum. and it cost about 4s. 6d. A drum contains four gallons, but we do not do much in this, it is really just a bye-product. If the Government would allow it to be carried free we could sell tons of it.

Q. 21. Have you ever tried mixing up Havana leaves with others to give them the flavour? No. I have never tried that, most of the tobacco we get here from Havana and Sumatra one has to buy direct from Holland, so there is no likelihood of there being any life in it.

Mr. W. J. Wallis—[TOBACCO.]

Q. 22. What class of cigar can you produce? The "Old Boy" cheroot and the "Lydia" cigar is ours, these are our cheapest lines, we produce cigars up to 35s. per 100 wholesale price.

Q. 23. Do you put any flavour in the tobaccos? A little. That tobacco (Golden Flake) is rather difficult to make.

Q. 24. I suppose each manufacturer has a different process? Yes. I learned mine from a man who had been working with me for four years, and who had never allowed me into his manipulating room. He then taught me in consideration of my advancing £500; he told me how long to boil sweetening for the tobacco and how to cut it. If you make the slightest difference in the sweetening one way or the other you may spoil the whole lot. I have spoiled hundreds of pounds weight of tobacco in this way. In Colonial tobacco what is wanted is a light yellow leaf and to preserve its colour you have to be especially careful not to damp too much. Therefore almost hard and dry in making flake. Our tobaccos lack natural gum and this has to be added, in putting this in you may spoil the burning quality of your tobacco, also care must be taken in the selection of the gum. As a manufacturer of cut tobaccos I would give more for White Burley tobacco than any other, as it can be put to so many different uses. A lot of people think that if they allow 16 to 20 leaves to grow on a plant they are getting more weight, but it is my experience that a plant growing only 10 or 12 leaves will absorb as much (if not more) than the 20 leaves and give you a better quality and better weight.

Q. 25. What is the cost of a good manufacturing plant? For cigars or a general smoking tobacco? An ordinary Legg's Cutting Machine with 9in. knife which can cut from 1,000 to 2,000 per day would cost at home, say

	£80	
Oil Engine in Johannesburg	125	
Snuff Mill „	50	
Press „	65	
Steam Boiler „	25	or £30
Knife Sharpener „	25	
Drying Pan „	30	
Lamps, etc. „	10	
	£510	

My plant in Johannesburg has cost me including fixing about £650.

Q. 26. Are you in a position to manufacture any class of tobacco? Yes, with the exception of cake tobacco. I cannot go in for making this because I have not a steam boiler, forms, etc.

Q. 27. Do you make any cigars? No, not in Johannesburg. This is not an expensive plant. Moulds would cost about 1s. 10d. each. I have a good plant taking it all round, outside of cigarette plant. Plug tobacco is a very expensive tobacco to make, but it has a ready sale. We can sell it cheaper than imported plug. The Government has given us a big duty on the imported article. We can manufacture and sell it at 4s. per lb. with a handsome profit.

Q. 28. I suppose you make snuff? Yes. Natal tobacco is totally unfit for making anything from; mixing with another kind of tobacco we can make a cigar, but by itself it is absolutely useless except for the very cheapest line of cut tobacco. With £1,000 of machinery you could turn out anything in the tobacco line bar cigarettes.

Q. 29. Suppose there was a factory in the middle of a tobacco district, is there any reason why a manufacturer should not do his own drying as well as manufacturing? No, if he is near enough to be able to get the cut plants on the same day. Supposing you cut at two o'clock, if you could bring it in say by eight o'clock into drying sheds.

Q. 30. With the plant the size you have given us what weights of tobacco could you deal with in a year? 300,000 lbs. weight. From a tobacco plant you get about ¼lb. tobacco. I have got machinery costing me £650 besides flavours, etc. I intend giving up business and shall be glad of a buyer for my plant, will sell if get say £400; it is in perfect order. My reason for giving up, is not having capital to continue with.

Q. 31. Are you living in Johannesburg? Yes.

APPENDIX XI.

LETTER FROM MR. W. J. WALLIS.

P.O. Box 2775,
Johannesburg,
17th August, 1904.

G. Shaw Scott, Esq.,
Agricultural Department,
Bloemfontein.

Dear Mr. Scott,

I wrote rather a long letter to Mr. Cohen on Saturday last and enclosed my expenses sheet and charges but have not had a reply yet. In my letter I pointed out the urgency of appointing a man at once if they intend going in for the curing and drying of leaf, for to give him a fair chance he ought to at least superintend the growing of the leaf if he cannot grow it himself.

Am sending you a cutting out of this morning's paper, which I think points out the need of starting at once to improve the growth and curing of tobacco. Here we have a Company formed of most of the leading English, American, and South African houses, with a large capital, who will be able to manufacture in South Africa, under license, the well known brands of the different home and foreign firms mentioned. This means a direct loss to the different Colonies as far as Customs are concerned in that instead of bringing out the manufactured article, they will bring out in leaf. You will say "Yes, but we get the benefit of their manufacturing here." I grant you that, but their manufacturing here and the duty on the leaf, will not be equal to the duty on the imported article manufactured elsewhere.

Secondly. When they come they will want leaf, and whoevere will give them the best leaf, will get their orders. Now why should Government not reap the benefit, so that, instead of facing a loss in Customs duties and nothing to replace such loss, they may have a substantial industry not only to replace such loss, but shew a good profit. In this new Company we should find ready purchases for a good Cigarette Tobacco as well as leaf for better class cuts. So that we need not think of exporting for a year or two but have a ready market at our doors for whatever we can produce. On Wednesday next there is to be sold two Ludington Cigarette Machines and other tobacco machinery, and would be a chance to pick up a cheap plant. Cigarettes of course pay handsomely over 100 per cent., and we are very heavy cigarette smokers in South Africa, but to conduct a cigarette manufacture, one wants lots of capital, and a good supply of leaf.

EXTRACT FROM "STAR."

TOBACCO TRADE IN SOUTH AFRICA.

IMPORTANT COMBINATION.

We understand that a Company has been formed, styled the "United Tobacco Companies, Limited," for the purpose of taking over the goodwill and business of Holt and Holt, Ltd., of Port Elizabeth and elsewhere; the Acme Cigarette Company, of Johannesburg, and the British Tobacco Company (South Africa) Limited.

The businesses of the latter Company comprise the trademarks and full trading rights in South Africa of the American Tobacco Company, W. D. and H. O. Wills, Ltd., Lambert and Butler, Ltd., John Player and Sons, Ltd., Ogden's, Ltd., Richmond Cavendish Company Ltd., Continental Tobacco Co., F. and J. Bell, and also the agency for the Habana Tobacco Company.

The members of the Board of the "United Tobacco Companies, Ltd." are Messrs. Wills, Ogden, Cutcliffe-Owen, Hood, Gracey, Hignett, Albert Holt, Hillier Holt, and David Holt.

The capital of the Company is £800,000 divided into 500,000 ordinary shares and 300,000 preference shares.

No shares will be offered to the public, the whole issue having been fully subscribed by the various Companies and firms interested.

APPENDIX XI.

REPORT BY MR. G. SHAW SCOTT.

TOBACCO CULTIVATION.

Seed.—The best and strongest plants should be selected for seed. These are not topped like the remainder of the plants and are left standing when the crop is harvested. All suckers must be carefully removed. When the crop is cut, the seed stalks should be staked to prevent their being damaged by the wind, and a small linen hood should be drawn over the head of each plant

to protect the seed from birds. As soon as the seed pods blacken the seed is ripe. The heads are then cut off and are hung in a dry and safe place to cure at any leisure time afterwards, the pods can be stripped from the stalks and the seed rubbed out by hand and winnowed. Its vitality is proved by its crackling when thrown upon a hot stove. Growers would undoubtedly find it to their advantage if they occasionally purchased imported seed from America and, instead of sowing seed grown on their own lands, effect an exchange with their neighbours.

Seed Beds.—A very friable soil is necessary for the seed beds. To obtain this it should be broken up to a considerable depth some time before the sowing season and well worked over at intervals. A sheltered situation should be selected, and unless the soil is very rich it should be heavily manured with good rotten dung. Before sowing the seed the soil should be dug over to the depth of six inches and levelled with a rake. The seed must then be sown at intervals of a few days, evenly on the surface, and beaten down with the hands or otherwise (1 oz. of seed is sufficient for an acre of plants) care being taken to only cover it slightly. The seed being very small is best mixed with ashes in order to distribute it evenly over the bed. The most convenient size for seed beds is 10 feet long and 5 feet wide, making 50 square feet each on which plants for half an acre can be raised. After the seed is sown the bed should be thoroughly wetted with a weak manure water, and if timely rains do not fall, this must be done as often as needed. If the plants spring up thickly they must be thinned out when about a week or two old, leaving about 1 square inch for each of the best. Those taken out may be used to fill blanks in the bed. Should weeds appear they must be removed with care. If there is danger of the plants being injured by frost they should be carefully covered with branches or bushes at night.

Preparation of Land.—The best soil for tobacco growing is a deep sandy loam containing a fair percentage of lime. Great care must be taken in preparing the ground. A sheltered situation is most desirable. It should be ploughed, allowed to remain fallow a month or so, ploughed again the reverse way, and again ploughed after a fortnight or month's interval. Harrow well, and put in plants. No crop will better repay the expense of proper preparation of the soil than tobacco.

Manure.—Good rotted manure is the most suitable. This is best spread over the land before giving the last ploughing. Manure that is not thoroughly rotted injures the plants more than benefits them. A piece of land well manured and thoroughly worked up will produce a far heavier weight of tobacco than one badly prepared. Consequently no expense or labour is so remunerative as that which is applied to the soil.

Planting should take place only during the latter part of the day unless the weather be cloudy, when it may be performed during the whole day. Some hours before commencing the transplanting the nursery beds should be thoroughly watered to facilitate the removal of the plants without tearing their roots. If the plants are of even size, so that all can be removed, the best plan is to take them out with a spade or trowel, leaving a lump of soil on each, but in most cases it will be necessary to take up each plant

separately. This should be done very carefully, holding with the thumb and forefinger as near as possible to the roots and drawing out the plants. It may be needful to gently raise them with a small pointed stick, if possible with a little soil adhering to their roots. The plants are taken at once in a basket covered with a damp cloth to the field for planting and placed in a cool shady spot. The planting is nearly the same as with cabbages, but requires more care, the plants being more tender, and their roots and leaves springing nearly from the same point they are more difficult to handle. In planting, you drop the plants at proper intervals (3 to 3½ feet apart each way) while the helper follows with a dibble made of a round stick 10 inches long and 1¼ inches in diameter. With the dibble he makes a hole and inserts the roots of the plant, taking care not to leave a vacant space under the roots. (In windy places the plants may be a little nearer together one way, and let the wind come side on). He next presses some earth around the roots with the dibble, and then more soil is spread loosely around the plant. When planting hold firmly with the leaves between thumb and finger, and the plants should be so firmly embedded that they cannot be easily lifted by holding on the top of one of the leaves. If the soil it dry it should be watered before planting. Flood the land and cultivate it when fit before planting. Should dry weather continue it may be necessary to apply water daily, perhaps for a week, that is, until the plants are thoroughly established. To do so, make a hole near the plant with the dibble, pour in water and cover with loose dry soil. Directly it is seen which plants have not taken root, others should be supplied without loss of time, this operation being repeated at the end of five or six days so that the whole field may be well filled with living plants. This is one of the most important operations for securing a good crop because the lands will require as much cultivation and labour bestowed on them if they have vacant spots as if they were full and regularly planted, and of course the yields would be less.

Irrigation.—The usual method is to lead the water close to the plants, consequently the ground round them becomes water worn. As it dries it cracks and becomes steely and requires water to be led frequently else the plant is immediately checked. The better plan would be to lead the water, fresh, not brackish, between the rows in one or two small furrows, taking care to keep it a fair distance from the plant, or the earth might be thrown up on each side of the plant, leaving the water to run away between the rows.

Cultivation.—After the plants have once taken root they grow rapidly. A tobacco field should be kept clean and in good tilth, both to promote the growth of the plant, and by removing grass, weeds, etc., to lessen the harbours for insects of all kinds. In ten days or so after the plants have been set out, hoe round and between them, removing the dry soil and drawing fresh moist earth to them. They should then be cultivated frequently with a shallow implement, such as a Planet Junior, throwing a little earth to the plant. The cultivation should be shallow. Do not cut or disturb the roots of the plants, as it checks their growth and tends to make a fibrous woody leaf. No rigid rule can be laid down as to the frequency of cultivation. As a rule land should be cultivated after water has been led on and after every rain as soon as the land is in condition to work.

The surface should be stirred after water or rain has been on the land both to admit air and to prevent excessive evaporation. When the plants get too large for mule cultivation, the ground must then be kept free from weeds, etc., with a hoe. It is better to pull up a few weeds, etc., near the plant than to use a tool because of the danger of injuring the roots.

Pests.—The most satisfactory way of dealing with these is to search for them in the early morning and destroy them by hand (during the heat of the day they retire into sheltered places where it is not easy to find them). This must be done almost the first morning after the plants are set out and continued at short intervals until they are got rid of, or until the tobacco is cut. Turkeys are invaluable for their grub eating propensities, therefore it would be well to let them run in the lands. Upon looking over the plants one will be seen with a single leaf and sometimes the whole plant eaten off and drawn down into the hole occupied by a large brown or black worm. You will see what look like little ant hills and round holes in the ground. By pointing about in the earth with a sharp pointed stick the worm will be found very near the mouth of the holes. Caterpillars must also be caught. They usually stay on the underside of the leaf. If a hole is seen in the leaf, no matter how small, raise it up, and generally the caterpillar will be found under it. All plants missing in the field should be renewed from the bed at once.

Topping and Suckering.—Tobacco is ready to top when the blossom has put out sufficiently to be taken hold of without injury to the top leaves. This may be deferred until a fair proportion of the plants have got to this stage.

Suckers appear in the axils of the leaves. These should be broken off as soon as they come; if not removed soon after their appearance the size of the leaves will be seriously impaired. When suckering, strip off all bottom damaged leaves and remove broken tips.

Harvesting.—The maturity of tobacco is seen if the leaves which were green up to now when held against the sun show yellowish, reddish or brownish spots, feel sticky, and when bent, break off short and clean. Before this period sets in the drying house should be in good order. This house is built to give room for the free hanging up of the tobacco so that it is protected from the sun, wind and rain, and is allowed to dry by the free circulation of the air. Any building will answer which has a good roof, boarded sides and enough windows and air holes which can be closed to keep up a mild circulation of air inside and also to keep out strong and too quick drying winds. If the tobacco is grown on a large scale, the house should have large doorways to drive a wagon in and out. There must be sticks all over the house, either crosswise or lengthwise, and these sticks must be ready and in their places. The work of harvesting the crops is commenced on a clear or cloudy, but not rainy day. The mature plants (those not ripe are left longer in the field if not too late in the season) are cut off near the ground and two of them tied together by the butt ends. If the crop is small they are then hung up in the field on riders which rest on two forks fastened in the ground, and are left there until evening to wilt.

If extensively grown they are left on the ground until well wilted, though if the sun be hot they should be closely watched or they will burn. They are then brought to the drying house and hung up. The tobacco is hung on the upper sticks first and the work continued downwards. Care is taken that the sticks are 6 to 8 inches apart, also that the plants are not too near together on the sticks, because the air should have free passage among the plants, as where they touch or rub against each other, unsightly spots are produced. The sticks must be pretty wide so that the two plants which are tied together and one of which hangs on each side are held well apart. Later, when the tobacco has dried off somewhat, the sticks and plants may be moved a little nearer to each other, but the plants on the upper sticks must not touch those on the lower. They should be so arranged that one lower stick is just in the middle of the space between two upper rows.

Another method of harvesting may be followed by those who cultivate tobacco on a small scale or who have hands and time enough. As all the leaves on the plant do not ripen at the same time, the under leaves always being a little earlier than the upper ones, they may gather the crop in the leaf, that is, only taking mature leaves from the stalk. This must be done daily so long as there are leaves on the stalk. In this way the crop will be harvested more slowly and it will cost more, but the tobacco will be better and of more even quality. The leaves are strung on strings instead of being hung up on sticks, with the same care and precautions as recommended for hanging up the whole plants. After the leaves are off the sticks must be cut off or pulled up, or they would still vegetate and take away the nourishment from the soil. No more tobacco leaves or plants should be cut than can be taken to the drying house and hung up on the same day. Mild clear weather will be beneficial for drying, strong and rough winds will do it too quickly, and wet damp weather will hinder it altogether. Should the latter continue for some time the place of the sticks or strings must be changed, and if notwithstanding this the tobacco gets mildewed it must be dried by fire. A fire is built in one or more excavations in the ground of the house and the heat allowed to go as evenly as possible through the plants. Care must be taken that the fire does not get too near the tobacco so that it gets singed or burned. A place directly above the fire should be therefore clear of tobacco. Stoves, with pipes to convey any smoke there may be outside the house, are better. The heat in the house may be kept up to 80 or 90 degrees. The best arrangements for drying will not be of any avail unless the tobacco has been fully matured before being harvested, for if this has not been the case it will never lose the well known green taste and no after manipulation, no drying or sorting, will free it.

Curing.—When the leaves are dry, which is seen when the stems become of a brown colour and break when bent, the next work is to make tobacco out of them, for up to now we have nothing but a tasteless dry weed. Its hidden qualities must be developed. This is done by a process of fermentation, the leaves are broken one by one from the stalks in damp weather (otherwise they would break), stretched out nice and even and with the ends in the same direction put in heaps. These heaps are afterwards put into one or more large conical heaps from four to six feet in diameter at the

base, and from 1½ to 2 feet at the top. These are covered with blankets, straw mats, or anything that will press the heap lightly and shut out the air. In 24 to 30 hours fermentation sets in. When the heap gets so hot inside that the hand cannot very well bear it, the heap is broken up and packed over again, putting the tobacco that had been on the outside on the inside and vice versa, and treating the same way as at first. In such heaps the tobacco remains 20 to 40 days until all the heat is gone. Then the heaps are broken up in damp weather and the leaves tied up in bundles of ½ to 1 lb. in weight, stretched even and packed in boxes, etc., pressed tightly and covered. The tobacco is now a saleable article.

The process of sweating must be conducted with every possible care, for on this depends the colour of the tobacco and to a large degree its flavour. If the fermentation is too strong, the tobacco gets black and the flavour is driven out. If too little fermented the colour remains green, and whitish yellow, and the flavour is not developed.

Sorting is done after the last breaking up of the heaps and consists in laying the damaged leaves apart from the whole ones, and these again are separated according to colour or other qualities into two, three or four different kinds, so that every variety is of the same colour and quality. Every kind is packed by itself. The work is not difficult and increases the price considerably.

APPENDIX XII.

LETTER FROM MR. H. H. BEAMISH.

Bloemfontein, O.R.C.,

October 6th, 1904.

The Secretary Industrial Commission, Bloemfontein.

Dear Sir,

I have the honour to say that I am still prepared to put down and work a modern Tobacco Manufacturing Plant in the Parys or Vredefort District, provided that the Government are willing to give me assistance in the way of a bonus or bounty on the produce of the factory.

I have made enquiries about the tobacco growing industry in the Vredefort district, and I find that the tobacco is put on the market in a very crude state.

With proper treatment and packing a substantial trade might develop, and I believe with a good factory in the district there is every prospect of great improvement both in quantity and quality of the local crops.

I am awaiting replies to my enquiries in the United States about the engagement of an expert in manufacturing and packing, and should certainly engage such a man should my proposal be accepted by the Government.

I have the honour to be,

Sir,

Your obedient servant,

H. H. BEAMISH.

Mr. H. H. Beamish—[LETTER TOBACCO.]

POTTERY.

EVIDENCE OF MR. PREECE, 25th April, 1904.

I have had experience in this work in the old country. My father before me also went in for it. In this country I have had experience in Natal, but while in Johannesburg I have only been prospecting and testing the different kinds of clay with a view to starting a pottery. I find some almost all over the Transvaal.

In the Orange River Colony suitable clay is found in Harrismith, Bethlehem, and as far as I know in Ficksburg. The kind of clay most suitable for pottery is China Clay. I have not seen any here except the common brick clay.

> Mr. Meiring explained that a large quantity of clay was to be had about four miles outside of the town, and it was arranged that Mr. Preece, accompanied by Mr. Leviseur, should visit the ground and report.

Pottery and tiles could be made without machinery if you wished to test the ground. I should say the best way to test the ground would be to make some very small samples, perhaps small pipes and bricks, burn them and have them tested.

I think this might be worked as a home industry, the chief difficulty would be in the burning, but if a small factory were erected the people might bring their wares there to be burned.

Pottery work is chiefly done by women at home, it is very light and clean work. The painting of the ware is nice work for ladies. Factory women can earn on an average £1 a week at this work. If you go in for glazing work, that is glazing in different colours, the machinery and kilns would be rather expensive. For ordinary plain work a brick kiln would do very well.

> Mr. Meiring explained that the Commission were desirous of securing a practical man who would be willing and capable of prospecting and testing clay in the Orange River Colony, with a view to starting this industry as soon as practicable, and Mr. Preece agreed to consider the matter and report next week as to conditions and assistance which he would require from the Government.

As to price of machinery, including moulds, for making sewer pipes up to 24in. such as you have here it would cost from £230 to £280 in England. A brick machine for making fancy bricks would cost in England about £180. Presses would run about £23 each. Dies would cost 5s. to 10s. Provided you could get a second hand engine and boiler it would cost you £1,000. An oil engine would not be suitable. The expense would run practically at about £5,000 for everything, taking into consideration that you would start right away making your own bricks for the building; the waste material can always be used for building the kilns.

(Shows illustration of hand machines turning out 5,000 bricks a day).

The Kaffirs would press these bricks at 1s. a day. It is better to start with unskilled labour because you can teach them. The Basuto is very quick at taking up anything of this sort. The Dutch turn out some very pretty work in carving, and this would be very useful in connection with the clay industry.

Cement is made of sand and lime, but in making cement bricks these must be steamed. I have got some samples of these bricks; it is a German process.

Mr. Meiring agreed to give a letter of introduction to a gentleman in Harrismith who would be able to assist Mr. Preece in getting white limestone there.

I have not had any experience in Pottery Schools; my only experience was with my father in his business in Hereford. At Pretoria the Railway have a beautiful bed of shale—one of the finest in the country.

As to prices of tiles, roofing tiles to cover a square foot each run at £3 a thousand, floor tiles 12s. to 15s. a hundred. In Maritzburg the houses there are covered with tiles—the tiles are made there. One objection to using tile roofing is that the timber roof must be made heavier.

I think I might be able to start in a small way with an advance of £1,000.

Mr. Preece agreed to send in letter with any proposals he had to make at his earliest convenience.

EVIDENCE OF MR. W. O. VALENTINE, 17th May, 1904.

Mr. Valentine submitted to the meeting samples of pottery which he had made from clay, found in Bloemfontein, and explained that there was a large quantity of the clay to be got from this bed, if permission to work it could be obtained from the Corporation. He explained that the specimens shown were not thoroughly baked, having only been in the furnace for three hours, when as a matter of fact they would require five or six hours to bring them to perfection, but notwithstanding this all were of opinion that the specimens shown were very good indeed. Mr. Valentine explained that these specimens were made from clay taken from the surface on the ground, and that it might be found that the clay was even better on digging down.

Q. 1. You have to grind that stuff very fine? Yes. That finer specimen I show you has plenty of sand in it, but I never washed it; it is just rough. The grain is very fine. For tiling it does not require so much washing. I tried the Kroonstad clay, but it is not so good. It is not fine enough for Pottery. I put it in the sun to dry, but it cracked. The other stuff which I mix with this clay would not burn alone, but mixed with this, it fires very well.

Mr. O. Valentine—[POTTERY.]

Q. 2. What assistance would you require in order to start this industry? I have no capital whatever, and would want the price for machinery. I would require to write to Germany for prices of machinery.

Q. 3. Do you want much machinery? For tile-making we want machinery, but for pottery we could make the small machines here. The pottery is made more by hand. My partner is an engineer and can fix up the machinery.

Q. 4. Have you ever made tiles? Yes.

Q. 5 You think of getting men from Italy? Yes, perhaps a good teacher and mechanic—he would want a salary of £12, and his fare to come.

Q. 6. What machinery would you require for tile-making? I would require a pressing machine, to turn out so many tiles per day, but they are not very expensive machines.

(Shows illustration of machine used in brick-making).

Q. 7. How do you bake these things? We would want a furnace. The mechanic from Italy will be able to arrange about that.

Some conversation took place as to whether Mr. Valentine should himself apply to the Corporation of Bloemfontein for right to work the ground in question, or the Commission on his behalf; it was agreed that the Commission should make application, with the explanation that in seeking for information in regard to clay suitable for pottery, etc., they had employed people to find suitable clay for the purpose; that this had been found in municipal ground, and requesting the right to work and try the ground on the same conditions as given to brick-makers.

Q. 8. In Italy do they begin to learn pottery work when they are very young? Yes, from about ten years of age.

It was suggested that application might be made to the Municipality for a site for a factory with pottery school attached, and this was agreed upon.

Q. 9. How soon could you get the men here from Italy? In a couple of month's time.

Q. 10. How many men do you think of getting? I could get plenty men; three experts would, I think, be sufficient to start the factory and school in a small way.

Q. 11. How much ground do you want for a factory? I think about one morgen would be enough.

Q. 12. Would these men come from Italy at their own expense? No, we would require to send them tickets—third-class tickets.

Q. 13. Have you any capital at all, you or your partner? No, nothing at all.

Q. 14. We want to know how far you would expect assistance from the Government in order to start this thing, and until we know the cost of plant, etc., it is difficult to offer anything? If possible I should like a free ticket to Cape Colony, Grahamstown, to see the other stuff I require for the clay, and if the Government could buy or rent this ground it would be a good thing. I want it to mix with the clay I get here.

It was arranged that Mr. Valentine with his partner should see Mr. Cohen and Mr. Armstrong, and come to some arrangement as to railway tickets and other details.

It was also arranged that Mr. Valentine should visit the ground at Grahamstown, find out probable cost of it, what is its extent, etc., and report to the Commission, after which some arrangement might be made about securing the ground there.

APPENDIX XIII.

MR. T. W. PREECE—REPORT ON BETHLEHEM AND HARRISMITH.

PROSPECTING FOR POTTERY CLAY.

Bloemfontein,

August 18th, 1904.

Gentlemen,

I have nothing favourable to report in the Harrismith District.

BETHLEHEM DISTRICT.

SAMPLE B.O.

I have to report finding clay shale on the farm Waterval No. 83, three miles from Bethlehem, and about 1½ from new railway; this clay is situated half way up small kopje of sandstone, running in length ¼ mile with proved depth of six feet. This clay as per sample B.O. is too strong to be worked by itself and must be mixed; it would then be suitable for pottery work, and tiles of fair quality.

SAMPLE KAFFIR POT.

On the farm Menies Rust, No. 844, twelve miles from Bethlehem, there is an excellent bed of clay running a distance of ½ mile along the face of sand stone hill with good sand stone surface and depth proved of 8 feet; this clay is of excellent quality for pottery work, roofing tiles, etc., and is easily mined; transport into Bethlehem would be very little. Sample Kaffir made water jug or pot handed in together with three bags green clay. I may say that the natives make many pots from this clay, it is of excellent quality and very suitable for kitchen utensils, basins, jugs, etc., being almost fire proof and non-porus.

SAMPLE B.L.

Ordinary pot clay from Town Lands, Bethlehem, great trouble in drying, therefore almost useless.

SAMPLE B.F. NO. 1.

This is an excellent bed of clay on Mr. Fourie's farm, adjoining Bethlehem Town Lands, and about 1½ miles from centre of town. Pots and tiles could be made from this clay, but would require mixing with sand or other suitable clay, such as Sample B.O. it would be then of excellent quality and of red colour.

SAMPLE B.F. NO. 2.

From the same farm but of no practical value.

SAMPLE C.C.

This clay was handed to me as a sample from Grahamstown, made up by itself is of very little value, but as a mixing clay for encaustic tiles, pottery ware, etc., is of excellent quality and value, but not absolutely necessary, as you have clay of equal value on the town lands, or rather, I should say, of more value.

FICKSBURG.

There is an excellent pottery clay on the town lands, which would burn of a bright red colour.

APPENDIX XIV.

REPORT OF MR. T. W. PREECE ON CLAY AT THE FARM ELSTOW.

Bloemfontein,
8th September, 1904.

Gentlemen,

I beg most respectfully to hand you the following particulars of clay on the farm Elstow, Orange River Colony, burnt samples of which I beg to submit.

I think that before going any further I should state that the burnt samples down to "E" are not a very good colour, but through no fault of the clay; in burning I had to contend firstly, with very smoky coal, and secondly, high and very changeable wind, and rain, otherwise the clay would have burnt harder, and of a very much brighter red colour.

A. Surface black clay running from 1 foot to 2 feet 6 inches deep, over a very large surface of ground, this clay can be used as taken from the ground for pottery, tiles, paving and roofing, also pipes, and would burn a good red colour.

B. Surface and depth red sand from 5 feet to 10 feet deep and very rich, in large quantity, as per samples made, you will see that it is possible to make any kind of pottery work from this alone, but I consider this sand to be

of very great value for mixing with any of the clays down to "E," giving each a brighter red colour, and making them much easier to dry; several of the brickyards in the Transvaal, one the only pottery works there, go to very great expense in carting this sand for mixing purposes and colour, burning a deep red, and will also take a salt glaze making it hard blue.

C. Red clay surface and depth from 4 feet to 12 feet deep. This clay is in every way suitable for pottery, tiles, paving and roofing, and especially pipes for irrigation purposes, absorbing practically no water and can be used without glazing.

D. (late No. 1. C.) Green clay of excellent quality, from 2 feet to 4 feet deep, this clay if used for pottery work alone would last a considerable time, say three to five years. I have previously reported on this clay as "No. 1. C." and on trying it again I find it equal in all respects to my first report, of a first-class quality for making pottery, etc., and a natural modelling clay, if mixed with "B" should give it a much better colour when burnt, the light colour being the only drawback when burnt, that this clay has *

E. Yellow clay in every respect equal to "D" but of a better colour, this clay also should only be used for pottery and modelling, it would then last a considerable time.

F. White clay. I have located two beds of this clay; proved depth of one from surface down to 5 feet to 12 feet, probably more. I consider this clay to be the most valuable I have seen yet, but I am not able to definitely state whether it is stone ware clay or not, until it has been put to a further test by fire. I also beg respectfully to state that an assay of this clay would be of very great advantage; so far as I have tested it, I consider it to be of very great importance, being suitable for making white glazed terra cotta tiles, earthenware or stoneware plates, jugs, etc., white pottery and roofing tiles.

H. Mixture of all the above with the exception of "F." The whole of the above clays adjoin one another, on the farm Elstow. B. and C. will also be found near the station, and one bed "F" under the kloof about one mile from the station, the samples are taken from ground running along the spruit, in which there was a good supply of water; although at the end of a very dry season, in all cases the clay may be used from the surface down (these are pure clays, not shales).

The above clays and ground are in every way most suitable for the manufacture of pottery, terra cotta, paving and roofing tiles (red and white), ornamental bricks (not common), pipes for irrigation works, etc., which could be started with careful management, and practically without risk, on a capital of say £5,000, providing that the owner would accept a Royalty instead of purchase; the machinery required would be very small. The following would enable them to carry out all the above work: one perforated pottery pan, one interchangeable pug mill (not the one usually in use in this country) and one single delivery drain pipe machine portable on its own wheels (a few alterations would have to be made in this) together

*See P. 87.

with complete set stocks and dies, etc., one interchangeable hand press (not lever) and dies, one pottery wheel, and set of roofing moulds, the Roman tile for preference, one second hand twelve horse power machine. Providing that a Company was formed, and would be prepared to build their kilns, sheds, etc., gradually, and chiefly from waste which would occur, and make all their own bricks, etc., the actual cash required to start would be about £2,000.

I am,

Gentlemen,

Yours most respectfully,

(Signed) TRACY W. PREECE.

APPENDIX XV.

REPORT OF MR. T. W. PREECE ON CLAY ON THE TOWN COMMONAGE, BLOEMFONTEIN.

Gentlemen,

At your request I have examined the clay ground as pointed out to me on the Town Lands, Bloemfontein, and beg most respectfully to submit the following:—

This ground has evidently been exploited before for the purpose of brick-making, and a large quantity of the red clay, which was pointed out to me as being so good, has evidently been used for that purpose. I note also that a diamond drill has been working there.

I find that the red clay cannot be used by itself, and is only of value for mixing with other clays. As you have previously had a good report on same, I have taken more time, and have been very careful in trying this clay. I can only come to the conclusion that the samples submitted for your previous inspection have not been made altogether from this clay, but from a very strong mixture of Grahamstown clay; and I most respectfully submit that you have been, perhaps unintentionally, misinformed of this fact; there is no doubt that when mixed they are of very excellent quality (rather light in colour) for any kind of pottery work, but the fact still remains, that the red clay by itself is of very little value. I now beg to submit you samples of clay which are in the same locality, each of which is made purely of the one kind, especially Nos. 4 and 5. No. 4 should almost equal in value the Grahamstown clay for mixing, and No. 5 is very much superior and very valuable for making white glazed tiles and earthenware. There are also several other shales here, all of which can be used.

SAMPLES.

A. 1. A good quality shale for paving tiles; there is also a bright red shale.

A. 2. Shale mixed with A. 3 not very good.

A. 3. Valueless without mixing. This is the red clay which has been pointed out to me.

A. 4. A good mixing clay, very similar to Grahamstown clay. A. 3 and 4 mixed should turn out some very good work, pots, etc., colour very light.

Mr. T. W. Preece—[REPORT.]

A. 5. This is really an excellent clay and very valuable in pottery work.

There are several varieties of good shales here for making paving tiles, etc., and, with careful mixing, pottery can also be made without going outside to obtain any other. I estimate that a small works can be carried on here by hand, employing from three to four tradesmen, will last about ten years. This proposition is not one that I can recommend to your notice as one which a large firm could take up; on the other hand a few men working by hand in a small way and being careful to pick their material, keep it free from lime stone, of which there is a large quantity intermixed with the clays, have every chance of making it a success. I may say for your information that it is not usual for pottery works to be built on the site of any clay beds; usually they are built in towns within the free delivery and collection of goods by rail, the different varieties of clay which they require, and the actual quantities are so small that it is far better to make the towns the centre. I am quite of the opinion from the different clays which you have in this Colony that there are very excellent prospects of success if a factory was started say in Bloemfontein in a small way by practical business men, with every possibility, within two years, of something like two hundred young girls and men finding employment. There is at present a very great demand, which is increasing, for encaustic tiles, and the ordinary common earthenware, and porcelain work. There is a small bed of very excellent clay A. 5 on the Town Lands, otherwise supposed to be lime, which would be of great value in a pottery works, also sample No. 1 C for roofing tiles, etc.

SAMPLE NO. 1 C. AND BAG *

This sample of clay was handed me by your Secretary, Mr. Cohen. This is a natural clay (pottery); by its appearance it has been taken from the surface of flat ground, and should be in large quantities. It is by far the best natural clay I have seen in the whole of South Africa, with one exception in Cape Town of fire clay for crucibles; it can be used as taken from the ground (as per sample) with little or no expense in making pottery, roofing and paving tiles; and is an excellent natural modelling clay (the work to be kept damp until completed), and when sent out in bags as per sample can be mixed at user's own convenience, with a little water and knife; it would be very suitable for schools, etc. The sample as made up No. 1 C. and clay in bag are the same as handed to me, and without any mixtures.

SAMPLE NO. 2 C.

Also handed me by the Secretary, Mr. Cohen; this is a fair quality clay but rather common, and is difficult to dry. In every other respect it is good. There is a very strong chemical in it which causes it to crack, probably sulphuric acid.

Yours very respectfully,

TRACY W. PREECE.

*See P. 85

APPENDIX XVI.

SOUTH AFRICAN COLLEGE AND METALLURGICAL LABORATORY.

Cape Town, 12th July, 1904.

The Orange River Colony Industrial Commission.

REPORT ON THE ANALYSIS MADE OF FOUR SAMPLES OF MINERAL DEPOSITS MARKED RESPECTIVELY WHITE, GREY, BROWN & BLACK.

According to the results of the quantitative analysis made, the constituents of the samples are as follows:—

	White.	Grey.	Brown.	Black.
Silica (free and combined)	15·3%	45·2%	51·8%	50·2%
Alumina	8·8%	33·0%	28·6%	23·5%
Oxide of Iron	·3%	·4%	7·5%	2·6%
Carbonate of Lime	68·4%	1·3%	—	·3%
Carbonate of Magnesia	1·6%	trace	—	—
Calcic Oxide	—	—	·3%	1·3%
Magnesia Oxide	—	—	·2%	·5%
Soda and Potash	trace	·6%	trace	1·6%
Organic Substance	—	1·6%	—	2·8%
Water (free and chemically combined) ...	5·6%	17·9%	11·6%	17·2%

1.—WHITE SAMPLE.

This sample is a somewhat siliceous limestone yielding on burning quicklime. Since this limestone contains about 24 per cent. of aluminic silicate it must be burnt with much care or else the lime will be of inferior quality, because the silica combines with a portion of the lime, if the heat in the kiln rises too high, forming calcic silicate, which is useless. This siliceous limestone is however an excellent material for making hydraulic cement if mixed in a certain proportion with the brown sample, viz., four parts of the white sample and one part of the brown sample, will be a suitable mixture for making a good hydraulic mortar on the same lines on which cement is made at the Pretoria Cement Factory.

2.—GREY SAMPLE.

Although this sample contains a small percentage of oxide of iron, it is suitable for making fine bricks if mixed with a sufficient quantity of pure fine sand, viz., two parts of grey sample and one part of clean fine sand.

For making ordinary bricks this clay is not sufficiently ferruginous and requires an admixture of such ferruginous clay as the brown sample is.

By using for every two parts of this grey sample one part of the brown sample, a mixture is obtained very suitable for making good ordinary bricks.

But I consider the brown sample too valuable to make ordinary bricks.

3.—BROWN SAMPLE.

This sample is very similar in chemical composition, texture and general appearance to Lemnian earth or bole, a material which is very suitable for making all kinds of pottery, tiles and the finest quality of terra cotta. For making ordinary common pottery this brown sample requires an addition of a small amount of a siliceous clay like the grey sample, whereas only clean very fine sand is required together with this bole for making terra cotta.

Much depends of course in making pottery, tiles and terra cotta upon the manner, how the drying, heating and burning of the articles is conducted.

This brown sample or lemnian earth or bole is evidently the most valuable of the four samples.

Without the admixture of other material it is suitable for making tiles.

4.—BLACK SAMPLE.

This sample is of a somewhat complex composition. It can be used in its natural state for making ordinary bricks. The quality of the bricks would be much improved by the addition of sand, viz., four parts of black sample with one part of sand.

(Signed) P. DANIEL HAHN, M.A.,
Professor of Chemistry.

APPENDIX XVIa.

Public Health Department,
Government Buildings,
Bloemfontein, O.R.C.,
12th October, 1904.

Sir,

With reference to the Chemical Analysis of a sample of earth forwarded to the Government Laboratories by Mr. Leviseur.

I beg to report to you that I have made an Analysis of the sample and I find that it contains:—

Moisture and Organic Matter	2,270 per cent.
Silica	83,880 per cent.
Iron Oxide and Alumina Combined ...	10,735 per cent.
Calcium	0,505 per cent.
Alumina	2,440 per cent.
Magnesia	0,165 per cent.
Potash and Soda	0,075 per cent.
	100,070 per cent.

The purposes for which the materials containing the above constituents, in the above mentioned proportions, can be used is largely dependent upon the results obtainable after practical tests have been applied—which are governed by purely physical and not chemical considerations alone.

The manufacture of bricks, Fuller's Earths and pottery would probably be the direction in which to test (practically) both unmixed and with an admixture of other materials the physical properties of this earth by the practical potter.

For the guidance of the Commission, as far as is possible, I have subjoined the following Standard Analysis of similar earths, together with the purposes for which such earths were found to be physically and chemically adapted.

	Cornish Kaolin.	Fire Clay.	Pipe Clay.	Brick Clay.
Silica	46.32	64.10	53.60	49.44
Alumina	39.74	23.15	32.00	34.26
Oxide of Iron	0.27	1.85	1.35	7.74
Calcium	0.36	—	0.40	1.48
Magnesia	0.44	0.95	trace	5.14
Potash and Soda ...	12.67	—	—	—
Moisture		10.00	12.08	1.94
	99.80	100.05	99.49	100.00

But as I have already endeavoured to point out there are many factors to be taken into account apart from the purely chemical constituents, which can only be determined in the factory.

For instance, few brick earths are found which are suitable for brick making without suitable admixture of other substances, such as lime, for fluxing purposes; silica for dilution in the case of warping, cracking, and contraction, and so forth.

Again, with reference to the particular sample under consideration, it is probable that a strongly plastic clay obtained from some other source will be required to render this sample of earth sufficiently plastic and in that case it might prove to be a very refractory fire brick earth.

I have the honour to be,

Sir,

Your obedient servant,

P. TARGETT ADAMS,

Deputy Medical Officer of Health, O.R.C., and Govt. Analyst and Bacteriologist.

W. S. Cohen, Esq.,

Secretary of the Industrial Commission.

APPENDIX XVII.

SUGAR BEET.

EXTRACT FROM LETTER FROM MR. F. M. G. NICHOLS ON BEET SUGAR CULTIVATION.

I would suggest that, this season, seed of a guaranteed sugar standard be distributed to farmers here for experimental purposes and the resulting crops be analysed and reported upon. If successful, and our soil is eminently adapted for root-growing of every description, then the following season our Association will make known through its members the advantages of the Industry and will give the Government a guarantee that a sufficient number of acres will be planted and properly cultivated, the Government, meantime, erecting a factory, on the most modest lines possible and the production of sugar will have become established in the Colony. I may mention that the current wholesale prices in Durban are, per short ton, for cane sugar £17 10s., and for imported beet sugar, £16 10s.

APPENDIX XVIII.

LETTER FROM PATHOLOGIST BUREAU OF PLANT INDUSTRY, U.S.A.

Washington, D.C., September 12th, 1904.

Mr. F. M. G. W. Nichols,
Atbara, Bethlehem, O.R.C.

Dear Sir,

Your letter of August 3rd addressed to the Secretary of Agriculture was referred to this Office, and Mr. Woods, the Pathologist and Physiologist in charge, has asked me to reply to your enquiries regarding sugar beets.

We are sending you under separate cover some publications which will undoubtedly give you some information that you desire. These publications will give you some of the details in regard to the selection of land, methods of cultivation, etc. The cost of a beet sugar factory is on the average about 500,000 dollars—that is, for a factory capable of handling 500 tons of beets per day. This is the capacity of an average factory in the United States. Some of the more modern factories are capable of handling as high as 1,200 tons in 24 hours, and one factory located in California has a capacity of 2,000 tons per day. A few of the earlier factories can handle only 350 tons per day. The cost, of course, varies with the capacity. It is usually estimated that in the United States a factory will cost 100,000 dollars for each 100 tons daily capacity. Factories that are capable of handling less than 500 tons per day are not considered satisfactory, so that many of the similar ones are being rebuilt in order to increase their capacity for handling the beets. There should be a sufficient quantity of beets grown for each factory so that there will be a run of not less than ninety days for the season. A run of this length is considered profitable, and if more beets are produced and conditions are favourable for a longer run, the profits are correspondingly increased.

The acreage for each factory in the United States averages about 5,000. The average tonnage per acre taking the country over, is only about nine tons, but many of the fields produce as high as 20 tons per acre. Of course there are growers who neglect their beets, get a small tonnage and thereby reduce the

general average. Each ton of beets is capable of producing from 200 to 250 pounds of sugar. It is very difficult to estimate the cost of operating a factory as so much depends upon the cost of material and labour. These all vary very much in different parts of the United States. A force of from 200 to 300 men is required to operate the factory in two shifts, day and night, so that the factory does not cease to turn out sugar from the time it is started until the season is over. The price of coal is, of course, very changeable, varying not only in different sections of the country and in different countries, but varying considerably from year to year. A large quantity of coal is required, of course, for operating the average factory. A large amount of lime stone is also required. These things should be within a comparatively easy reach and not too expensive in order to make a sugar factory satisfactory.

None of the factories in the United States are used for any other purposes after the sugar making season is over. I have often remarked to the managers of the factories in this country that it seemed a pity that so much expensive machinery should remain practically idle for about nine months during the year. They say that nearly all that time is required for over hauling the machinery and putting it into good shape for the coming season, and besides they usually have a large quantity of improperly worked sugar and molasses which must be reworked and recrystallised, so that it does not seem possible to utilise the machinery for any other purpose than for the manufacture of sugar. Some use is made of the refuse material from the sugar factory, the pulp being used largely as a stock food, and at one place in the United States the refuse molasses are utilised in manufacturing alcohol. The refuse from the alcohol factory is utilised in making a fertilizer.

If we can give you any further information in regard to sugar factories or the growing of sugar beets, we shall be very glad to do so, as we are very much interested in the development of this important industry.

Yery truly yours,

(Signed) C. O. TOWNSHEND,
Pathologist.

APPENDIX XIX.

LETTER FROM PROFESSOR OF CHEMISTRY, GUELPH, ONTARIO, ON THE SUGAR BEET INDUSTRY.

Guelph, Canada,

August 31st, 1904.

Dear President Creelman,

In reply to the questions re Sugar Beet Industry in Canada embodied in the accompanying letter, I may say that the main reason why the manufacture of beet sugar in Canada up to date has not proved successful is the scarcity of labour. The sugar beet is a very highly bred plant, and must have the very best treatment to get the best of results. For considerably over a hundred years it has been grown and treated to the very best of cultivation to increase the amount of sugar in the beet. If it does not get this cultivation, not only is the yield small, but the quantity of sugar is low. I would rather trust to the results of growing beets on poor land with good cultivation than the best of beet land and poor cultivation. From the time the beets appear

above ground until the leaves fully cover the spaces between the rows, cultivation is all important, and that it should be timely is also very important. With labour on the farms so scarce as it is at present, farmers have felt that, while there was money in growing beets, if they could not get the help they had better leave it alone. In the Berlin (Ontario, Canada) District, on many of the German farms, where a great deal of help is got from all the members of the family, the Ontario Sugar Beet Company have been able to get no more than two-thirds of the full run in their third season. A visit to the farms of the growers shows that the sugar beet crop is a remarkably good one for cleaning the land, as the thick crops prevent any aftergrowth of weeds. The farmers themselves say that the crop is not hard on the land, not nearly as hard as the ordinary roots; some even claim that it is equal to a summer fallowing in its effect upon the following crop.

The great majority of the farmers also say that it is one of the best money making crops that they have, the whole difficulty being to get help for the labour involved in the cleaning of the crop.

If the farmers in the Orange River Colony are not good cultivators, I think it would be useless for them to commence growing this crop, the black labour might be made expert enough to do the thinning and hoeing in time, but unless the farmers themselves are good cultivators, I do not think the black labour could become proficient.

You will doubtless know that there are four factories built in Ontario, and that two of these discontinued at the end of the second season. The cause of the Wharton Beet Sugar Co.'s failure was that they never had sufficient capital to run a business properly. They were really into lawsuits, partly brought on by the scarcity of money, before the foundations were completed, and the same condition was getting worse the longer they stayed in the business. The great surprise was that they got any beets the second season at all, for in many cases the first season's beets were not paid for when the second season's beets were contracted for. I understand from conversation with a few men in that neighbourhood that they are very sorry that the factory is closed for they considered beets their best money making crop. The Dresden Sugar Company has moved their factory to Wisconsin. The factories at Dresden and Wallaceburg were really too close together. The two factories were bidding against one another for beets all the time, and Mr. Davidson, practically owner of the Dresden concern, became very unpopular in his immediate District, and concluded he was going to have too hard an up-hill fight and moved the factory away entirely. We thus have just the two factories now working, and as I understand it both factories will have but two-thirds of a full run.

The quantity of the beets grown in Ontario is really unexcelled on this Continent, but it is a question of labour that will make or destroy the Industry in Ontario.

Yours truly,

(Signed) R. HARCOURT.

President Creelman,

College.

VEGETABLE OILS AND GUMS.

EVIDENCE OF MR. HEWITT, OF MESSRS. HEYNES MATHEW AND CO., 19th March, 1904.

MR. MEIRING explained to Mr. Hewitt the objects of the Commission, and asked his opinion on the production of gums and oils in this country.

MR. HEWITT:—

The production of Castor Oil is a matter which has been in my mind for many years. I know that there is an enormous amount of castor oil consumed in this country, both for medicinal use, and by the Railway. They get thousands of pounds weight at a time. The plant grows wild here very freely. Farmers grow it as hedges, and it requires no looking after whatever. The process of manufacture is simplicity itself. The husks are removed and the seeds pressed. For lubricating purposes and for procuring the common oil, the seeds are boiled, and in that way you get a larger percentage of oil, a darker colour and a stronger flavour. Until ten years ago all the oil obtained in the world was produced in Italy and in India. The best oil is the cold pressed oil from Italy—the common oil is from India. I should think about eight or ten years ago—I was in London at the time—a man called Mitchell started a factory in the south of London, pressing the oil there, and was most successful with it. Now Mitchell's Castor Oil is the standard oil which everyone gets. There is a good deal of refining done in France, but their oil is not recommended. They buy common Indian oil, and bleach it with sulphuric acid, but although it looks clear the taste is not good.

Q. 1. Is it an expensive process the refining of the oil? Oh no, there is no refining to be done.

Q. 2. There is the difference between the lubricating and the other oil? The common oil is obtained by boiling and then pressing to the utmost capacity. For the manufacture of medicinal oil, the seeds are very carefully cleaned and the oil is pressed cold. For these seed oils, we used to press them with an hydraulic press. Castor oil we did not press. There is no real process of refining, it is simply filtering. It is merely the pure oil. The expenditure in plant would be microscopic.

Q. 3. Do you think the use of Castor Oil would be largely increased if we could have it cheaper? No I don't think it would. The demand for it is enormous.

Q. 4. Are there any other uses it can be put to except for lubricating and medicinal use? I don't think so. In India the natives use it for frying food, they like the flavour. I certainly think that there is a most promising field here. It is a thing I have been thinking of for years. Had I gone into country life I should certainly have taken it up myself. Linseed Oil should certainly pay for manufacturing.

Q. 5. Have you ever done any actual pressing? Yes, I pressed Linseed Oil. Of course what we used to press in London was for medicinal purposes. You get about 30 per cent. cold pressed, and about 60 per cent. by boiling the seeds.

Q. 6. What is the pressure required? I could not say. We had a hydraulic press, and we simply pressed until no more came. We operated on 20 or 30 lbs. at a time. There is a very large market for the raw linseed itself. I did not use the cake. The seed can be grown to perfection here. It is also grown in England. The best linseed we get in the trade is English. It is a small seed, but very rich in oil. It grows very largely.

Q. 7. With regard to the gums, what gums do you get here? Only the one from the thorn bushes. I cannot understand how it was, but during the Soudan War they were paying 3s. and 4s. a lb. in England, while it was being bought in the Eastern Provinces at 10s. a bag. We use it for all sorts of things and very largely in lithography. When the design is etched on the stone, they gum up the parts that are not to be used. For medicinal use it is all picked over by hand; that work employs hundreds of girls. The gums are spread out on tables, and the girls pick it.

Q. 8. Would it be better to do that work, or to sell the raw stuff as they take it from the trees? It would be best to send it to London. The demand for picked gum here is very small.

Q. 9. Could they send the picked gum home? You could get it picked more cheaply in London. It is excellent gum which is produced here. I prefer it to the Egyptian gum. We have no definite botanical source for it.

Q. 10. Do you know what is the best season to pick it ? Just about now, after the rains.

Q. 11. Is there any exported from South Africa to England now? I don't know, I cannot find that out. I do not send any away. Our gum is supposed to come from East Africa. I believe a great deal of it is South African gum. At home good gum is worth 2s. to 2s. 6d. a lb.—the common gum 9d.; a really fine white gum, 3s.—what we call tears. I have noticed about this gum that we do not get it so much in the tears as the Eastern African gum. There is an enormous amount of it produced. I remember seeing a tree which might have been struck by lightening, and quite a river of gum had come out of it. There is a plentiful market for all that can be got. The Cape Government use a good deal.

Q. 12. Eucalyptus—you do not touch the local source at all? No, that we get all from Australia. Nobody has gone in for it largely. There are so many species of Eucalyptus, it would require an expert to go into these. Of course in the trade the oils vary very much in value, but I see no reason why it should not be distilled here. There is a very small demand for the red Eucalyptus Gum—very small indeed. I believe that in Australia the farmers distil oil. I am told it is quite a common thing for men with no technical experience to do this. It is bought up I believe by travelling agents. I notice that stramonium grows here very well. There is a very considerable demand for it. You see it all about the streets—a most excellent quality. I have collected a lot during the last two or three years and used it. I first tried it with a very bad asthma patient, and he said it was better than anything he had tried. You simply strip off the leaves and dry it, or it can be made into powder.

Q. 13. Could the people pick it and bring it to you dried? No, it would be better to have fields of it, and have the bushes cut down and taken away. You would have the stems removed in the factory.

Q. 14. To what extent would it be worth while to grow it? You could certainly supply the Colonial requirements, which would be fairly large. You simply allow the leaves to dry so that they won't mould, and sell them in that state. I think in this there might be an abundant profit. I am not certain as to what it is worth, I think 1s. 6d. a lb. in South Africa, and 9d. in England dried. There is an enormous demand for it. I believe a large number of our drugs could be very successfully grown in this country.

Q. 15. Could you give us a list of things which might be worth cultivating in this country? Yes, I will do that. During the recent War there was an enormous demand for ipecacuanha—the price is 3s. an ounce. I don't know, but I think it could be grown here. It comes from South America. We find the same plants growing in so many different countries. A good many of our drugs come from Persia, and I have been of opinion for a long time that many of them could be grown here. Myrrh, for instance, is very valuable, and there is a good demand for it. These things do not drop out of use much, and the demand does not vary. Coca and Jaborandi, used for making hair washes, might be very profitable if they could be grown in this country—of course, not to the same extent as Castor Oil and Linseed. In these you have a big thing to start with. In the freight railage and duty you have more than the original cost. For castor oil we pay 4½d. a lb. in England, and 1s. here. Linseed we buy for 1s. 9d. a gallon at home; the wholesale rate at the coast is 5s. 6d. a gallon. Aloes are produced in this country. What we call aloes is the dried juice from the tree. We get it from Barbadoes mostly; of course there is a lot produced in the Cape. There is a man there, a missionary, engaged in the cultivation of it. The Juice is exported in cases. The tree is tapped, and the juice collected and exposed in dishes to the sun, when it thickens. There seems to be a difficulty in cultivating it in this country. I know of one man who tried but did not succeed. I believe there is quite an industry in Natal in Aloes, but there is a peculiarity in the Natal aloes which we have always to look into. The Cape aloe is a very common variety—it is only used for horse medicine.

Q. 16. Do they use any oil from the Sunflower? I have read of an enormous industry in the oil from the Sunflower. There has appeared in the drug trade of late years an oil sold as Salad Oil, a sweet oil which one can never get at the origin of, and I think it might be from the Sunflower. Rape Seed Oil is largely used for lubricating purposes, or making embrocations and ointments and might be tried. In Linseed I believe you would find a demand in Europe for a perfectly pure linseed oil guaranteed to be drawn perfectly cold. It is a thing that is practically unobtainable. The ordinary oil presser will not do that, he wants his large percentage. It might pay to have one press doing pure oil which you could guarantee, and being a Government production there would be more faith in it. Neatsfoot oil

is gone in for a bit in this country. We sell tons of bees' wax. Cocoa Nut Oil, I do not know if it would grow here; it is used a lot.

Mr. Meiring thanked Mr. Hewitt for his kind attendance, and Mr. Hewitt promised to send in the list of articles above referred to.

EVIDENCE OF MR. WINTLE ON SEEDS.—4th June, 1904.

Q. 1. Have you got a list of the different things you have grown? Yes. Castor Oil, Indian Gram, Linseed, Bulrush Millet, Sunflowers, etc.

(Shews samples of White Gram, Millet, etc.)

Q. 2. Do you find Gram grows well? Yes. It is a splendid article for feeding horses and milk cattle, and produces beautiful yellow butter.

Q. 3. Would it grow in dry lands? Yes, I think so, it might want a certain amount of irrigation. When wheat and barley are killed by frost, gram is all right.

Q. 4. Do you not grow rape? No.

Q. 5. Sunflowers? Yes.

Q. 6. Does Linseed want much irrigation? No, not much.

Q. 7. Is it grown with irrigation? Just a little water, I plant it in the Spring.

Q. 8. Could you make up a list showing each of these things that you grow, the time they have taken to grow, the treatment whether irrigated or not? Yes. I plant most of these things in September, and reap them in January. I use just a little water to start them, and then almost none. The gram was covered up three times with sand drifts, and it came through them all.

Q. 9. Do you reap all these at the same time? Yes, I am going to put in some gram now, I think it will stand the frost. In my garden when the peas were killed by frost, the gram stood all right. The white gram stands frost in Peshawur. That other gram would have been just as big, only it had bad soil; it was covered to within an inch of the top with sand.

Q. 10. Do you get as good a crop of Millet as Kaffir Corn? Yes, you get very heavy crops of these. I never ploughed the ground at all, just dug it up and put in the seed. The soil for mealies is good for Millet. It stands drought for ever. Millet would not stand the frost.

Q. 11. Is Castor Oil an annual? Yes, it is better to grow it every year, using fresh seed.

Q. 12. Do you water Castor Oil? Yes, just the small plants. I only dug little holes and put in the seed. If you cultivate the ground properly before, you would not require to water.

Q. 13. Do you grow any Cotton? No. I don't think it would ripen quickly enough. You want a lot of labour for cotton.

Q. 14. Have you ever done any pressing? No. I have only seen the ordinary native pressing. It is really crushing. They crush Linseed Oil, Mustard Oil and Castor Oil. It does not cost much, they have their own bullocks, and they crush their own seed. I think in Winburg the gram would grow very well. The natives consider millet a much better food than any other grain they have in India. It is the best food you can have to rear chickens or any poultry. In Gram you get two or three seeds in a pod, one tree might have 50 or 60 pods on it. The bush is very good dry fodder. It makes the best dry chaff going. You crush them and soak them in water for five or ten minutes before giving to the horses.

(Arranged that Mr. Wintle will send samples of Castor Oil, to be sent with other seeds, to Agricultural Department).

APPENDIX XX.

LIST OF DRUGS THE CULTIVATION OF WHICH IS SUGGESTED.

Linseed.
Buchu (indigenous to this country).
Licorice.
Peppermint.
Olive.
Opium.
Santal.
Senna.
Ginger.
Caraway.

APPENDIX XXI.

LIST OF SEEDS AND INDIAN TREES GROWN AT MUSHROOM VALLEY.

Names of Seeds and Trees.	
Castor (large).	Sown in September, only watered at commencement, gave a good yield. Would do well in this Colony.
Castor (small).	Sown in September, only watered at commencement, gave a good yield. Would do well in this Colony. Superior to above for oil.
Linseed (small).	Sown in September, only watered at commencement, gave a good yield. Would do well in this Colony.
Gram. (white).	Sown in September, only watered at commencement, a good grain for horses, cattle, pigs, &c., stands drought well, a heavy cropper.
Gram (common).	Sown in September, only watered at commencement, a good grain for horses, cattle, pigs, &c., stands drought well, a heavy cropper.
Millet (bulrush).	Sown in September, only watered at commencement, a good grain for chickens, eaten as food by the natives of India, stands drought well, a heavy cropper.

TREES.

Seesum (common).	Good timber tree, excellent wood for furniture, fas grower, grown from seed in September, now stands three feet high.
Bhalour.	Large forest tree, quick grower.
Syris.	Large ornamental tree.
Baal.	Fruit tree. Dried fruit used for dysentry.
Hymilian Pines.	Quick growers. Splendid break wind. Grow to a large size.

N.B.—Gram and Millet are always grown in India in the non-irrigated tracts as they require less water than any other grain. Castor Oil also would not require much water, if the lands are well prepared at first.

(Signed) P. W. WINTLE,
Mushroom Valley, Winburg.

APPENDIX XXII.

LETTER FROM TRAFFIC MANAGER C.S.A.R. ON THE CONSUMPTION OF CASTOR OIL—27th June, 1904.

Sir,

With reference to your letter of the 14th instant No. C. 206, respecting the consumption of Castor Oil for lubricating purposes in the Transvaal and Orange River Colony, and further to my acknowledgment of the 17th idem.

I have the honour to inform you that the total consumption of Castor Oil on the C.S.A.R. was 59,556 Imperial Gallons during the twelve months ended April, 1904.

The average monthly consumption during the period May, 1904, to July, 1904, inclusive, was 3,073 Imperial Gallons.

It should be understood that the consumption of Lubricating Oils depends entirely upon the policy pursued as regards lubrication, and the contemplated use of Compound Oils will no doubt affect the consumption of Castor Oil to a great extent, although whether the result of experiments now being made in Compounding Oils will be to increase or decrease the consumption it is impossible to say.

I have the honour to be,
Sir,
Your obedient servant,
W. H. BARRETT,
Traffic Manager.

The Secretary,
Industrial Commission.

The Traffic Manager, C.S.A.R.—[LETTER CASTOR OIL.]

EVIDENCE OF MR. JARVIS ON JUTE, HEMP, FLAX AND OTHER FIBRES.

24th June, 1903.

Q. 1. I believe you have had a good deal of experience with the fibre industries? All my life since a boy of 12 years of age.

Q. 2. Where mostly have you had this experience? Twelve years in India, and I was on the Continent for the Portuguese Government for a year putting up a factory, and teaching them how to work the machinery—the balance of the time in business at home.

Q. 3. You have had experience in Jute, Hemp, Flax? All of them.

Q. 4. Cotton? No.

Q. 5. What sort of climate is suitable for Jute, and Hemp and Flax? Hemp will grow where cereals grow, so will flax; Jute is a tropical plant again. India is almost the only country which can produce it.

Q. 6. Do you think it would grow in Natal? Well it grows wild in Lydenburg. A friend of mine sent me a sample which he got on a farm there.

Q. 7. Was it very low down or high? I could not say, I have never been in Lydenburg.

(Mr. Jarvis read to the meeting the following Statement on Rhea, Jute, Flax, Hemp, and the Castor Oil Plant).

Gentlemen,

My presence here to-day is to express myself on the industries mentioned in my letter. One of the many industries you mention interests me very much, viz., Rope-making. But you can readily understand to enable you to make a rope in the first place you must have fibre. My experience of the various fibres has been life-long, and I will honestly say, Why not take advantage of your fertile soil and good climate and grow the various fibres as mentioned in my letter to your Commission, namely Wild Rhea, Jute, Flax, Hemp, and also the Castor Oil Tree. Each and all of these industries are of great commercial value and well worthy of your earnest consideration. In 1898 the late Cecil J. Rhodes decided to grow the Rhea plant in Rhodesia. Herewith an extract which I copied from the Johannesburg "Star" of 20th August, 1898. I may here explain when first I arrived in Calcutta in 1872, the Rhea was then the subject of conversation to all interested in fibre owing to the prizes offered by the Indian Government, viz., £5,000 and £2,000 for the best process to extract the gummy matter from the fibre, and at a price to enable it to compete commercially with rival fibres. (Herewith cuttings from Calcutta papers bearing on the superiority of Rhea). Since 1898 another fibre has been found by Dr. Watt, Reporter on Products to the Government of India. The new fibre or plant is called Wild Rhea, and which contains no gum, and can readily be developed by the peasant farmer. At Page No. 111 Agricultural Ledger (also herewith) you will see a table of comparative tests. You will thus see that the new fibre will sooner or later become an article of great commercial value, and worthy of your consideration.

Jute.—Another Fibre I mentioned (herewith samples) which I personally prepared before leaving Calcutta. I have been associated with various fibres for the period of twelve years in Calcutta, and immediately connected with the spinning and weaving of the Jute, Hemp, and Flax. Herewith a photo taken shortly before I left Calcutta showing one department of machinery. I am one of the three figures, having had charge of all the machinery in the mill. This Jute Fibre, as I wish to inform you, grows wild in some of the Districts in Lydenburg, a sample of which I had sent me by a friend some years ago when in Johannesburg.

Flax.—Another fibre of great commercial value from which we make sails for our ships of war as well as the cloth for our fine linen shirts, etc., is the fibre called Flax. Then in addition to the fibre we get the Linseed, from which we extract the Linseed Oil by hydraulic pressure. When the Oil is extracted there remains the Oil Cake, a most nutritious article of food for fattening cattle, etc. The United Kingdom is the largest consumer of the flax fibre, and Russia, I may say, is the largest producer. I was looking over some extracts of many years ago, and Russia exported Flax to the United Kingdom to the value of £2,000,000; Hemp, £250,000; Linseed Oil Cake, £236,000. Ireland is also a large producer of a very superior Flax.

Hemp.—Is another fibre I mentioned, and also worthy of attention, which is largely used for making heavy Ropes, as well as for making fine twines, etc. —treatment similar to flax.

Castor Oil Tree.—Another article of great commercial value and which grows wild in India, the berry from which, after being pressed, we get the castor oil which crudely is largely used for heavy bearings—when refined for medicinal purposes, etc.

Q. 8. You plant the Jute from seed? It is an annual, it has to be sown every year. (Shows samples of Jute plant 3 to 5 yards in length). It is a wonderful fibre. It is the cheapest of all fibres, and from it they make sacks, sails, and all sorts of things. The seed is something like the onion seed. It grows like a weed. Sometimes it is of a darker colour—sometimes lighter, depending on the water. It is better to have it a nice clean white colour.

Q. 9. Is it the case that it requires 70 inches of rainfall? It must be irrigated. Where it grows in Bengal it is as flat as a billiard table, the seed is sown, then the rain comes and it begins to shoot up. It come to maturity in three months, and grows about 15 feet high.

Q. 10. Do you think it wants all that water? They just give it sufficient. The fields are generally below the level of the river. They have little sluice gates to the fields and when the rains come and the river floods if they do not want so much water they close these little sluice gates.

Q. 11. What price does the Jute fetch? About £12 to £18 a ton. It is the cheapest of all fibres.

Q. 12. Is the process of working the Flax an expensive one? You would require the machinery. You would get a set of machinery for about £1,500.

I went out with a small plant for the Portuguese Government. They had been spinning by hand. Afterwards they got £3,000 worth of machinery.

Q. 13. Did they grow the Flax? No, they got it from Russia. In Ireland they produce better Flax than almost any other place.

Q. 14. Do you think that is due to the quality of the seed or the nature of the soil? It is a different nature of Flax. It is a very fine fibre. There is a lot in the treatment of it. That is why they have the superior linen, smooth and fine.

Q. 15. Do you think it is more the treatment afterwards than the nature of the Flax? The climate and soil have to do with it to an extent. Suppose you got Irish seed over to Russia, and Russian seed to Ireland, it might turn out quite differently.

Q. 16. Would you be able to supply us with the seed and the root of the Rhea, Jute and Flax? The roots are generally supplied from India. The best way would be to correspond with them, or you might get the information by writing to Ireland or Petersburg. Get some from the Consul in Petersburg, and from the Lieutenant-Governor in Ireland. You would require the roots from India.

Q. 17. Would they travel all right. Oh yes.

Q. 18. Does it take long to teach the people to work these fibres? No, not at all. The Indians are very intelligent. When I went over to Lisbon to put up the machinery and teach the people, it was marvellous how quickly they picked it up. Of course they had been in the habit of working with the fibres when spinning by hand, but they knew nothing about machinery. I think the Dutch little boys and girls would soon pick it up.

Q. 19. It is not a difficult process to learn? Oh no, not so bad as cotton.

Q. 20. What do they make from the Jute? Coal sacks, grain bags, etc.

Q. 21. How do they treat the raw material? Is there any hand process? No. They generally bring it in what they call drums. It is selected, the good from the bad, steeped with water and a little oil, 5 per cent. of oil on to the raw material. It does not remain in the water at all the machinery oils and waters it. The process is very simple. One mill consumes about 60 tons of Jute per day.

Q. 22. It is then sent to the weaving machines? Yes, in another department. There is machinery for making it into twine, coal sacks or bags of all sorts. Jute is good enough for that, but that strong white twine you see is made from Italian Flax.

Q. 23. The Hemp I suppose is worked much the same? Just exactly the same. (Shows illustrations of machinery in different departments, and process explained to the Chairman).

I have seen the Castor Oil plant grow here, but never properly treated.

Q. 24. Is there any fibre in the pulp? No, it is simply grown for the berry.

Q. 25. Have you had experience in the making of Castor Oil? Yes. It is simply done by hydraulic pressure. It is very simple. The oil is simply pressed from the berry, and leaves the oil cake.

Q. 26. It is then purified? It is purified by simply exposing it to the sun.

Q. 27. All that is required is the hydraulic machinery for pressing it? The same press would do for linseed.

Q. 28. What is the pressure per square inch? We got our press from Nasmyth; of Glasgow. We got a pressure of three tons per square inch. We got the pressure up equal to 1,400 tons, but the pressure on the hoops sometimes cut the bags right through, and we had to stop it.

Q. 29. The Wild Rhea, do you use that only for the same purposes as Jute? No, it is not yet come to a commercial article at all yet. In Calcutta in the Museum you will see beautiful work made from Rhea, tablecloths, etc., but they cannot get it to come in at a price, though in France they can do it. They have got machinery for taking out the gum.

Q. 30. These are finer articles they make from Rhea? Yes, most wonderful things.

(Shows samples of "Sisal" hemp with which the natives in India make fishing tackle).

Q. 31. Besides the rope and the packing in the piece what do they make of the Jute? Carpets and rugs, stair carpets, packing linen—everything is made of Jute.

Q. 32. Is it so cheap because labour is cheap in India? Yes. For Flax and Hemp you would need to get the farmers and the natives to go in for it.

Q. 33. You think that here machinery might be erected, in a central place, and the people could bring in their products for sale? Yes.

Q. 34. What is the usual price? In Ireland Flax would bring 5s. or 6s. per stone—£30 or £50 a ton.

Q. 35. Is it easily gathered? They pull it up by the root, and put it into little bundles.

Q. 36. Does it take a lot of labour to clean it? No, not much, they have machinery for it. They have all little "finning mills" for cleaning it, ready for the flax spinners. They come in long distances.

Q. 37. Is it easily manipulated for the machinery process? It simply requires to be steeped in water (for perhaps a fortnight), dried, and the good selected from the bad.

Q. 38. When it is purchased by the Flax merchants it is ready for the mill? Yes. They tie it into small bundles, about six inches round, it is carefully handled because it is valuable.

APPENDIX XXIII.

LETTER FROM MR. W. R. DUNSTAN AS TO COTTON GROWING IN O.R.C.

Imperial Institute,

Imperial Institute Road,

London, S.W.,

26th September, 1904.

Sir,

I beg to acknowledge the receipt of your letter No. 5860/04 dated 8th August, 1904, enclosing a copy of a Minute from the Secretary of the Industrial Commission with regard to the prospects of Cotton Growing in the Orange River Colony.

The sample of so-called "Wild Cotton" which accompanied the Minute is not derived from the true cotton plant (Gossypium Soecies) but consists of the floss or seed hairs of an entirely distinct plant, probably a species of Gomphocarpus of the Natural Order Asclepiadaceae. The material is brittle and unsuitable for spinning. It could only be utilised as a filling material in upholstery, and is worth about 4d. to 5d. per lb. in the London Market.

It is probable that long stapled cotton such as "Sea Island" and Egyptian could not be grown successfully in the Orange River Colony since they require a humid atmosphere, a rich soil and a long growing season. Experiments should therefore be made with short stapled varieties such as American "Upland." Seeds for preliminary trials could be obtained from Messrs. D. Henderson and Co., Seed Merchants, New York, U.S.A., but for planting on a larger scale selected seed should, if possible, be procured from the United States Agricultural Department at Washington. I should be happy to receive for examination and valuation samples of the cotton grown experimentally. These should consist, if possible, both of ginned and unginned cotton.

I note that it is proposed to attempt the cultivation of Ramie Fibre in the Orange River Colony, and I shall be interested to hear the results of the experiment. The plant grows readily, but over and above the cost of preparing the fibre, one of the difficulties of Ramie cultivation is that the market for the product is narrow, and both demand and supply are liable to serious fluctuation. It would be best, therefore, for planters before cultivating on an extensive scale to assure themselves of a market for their product, possibly by entering into an agreement with a firm of Ramie spinners.

I have the honour to be, Sir,

Your obedient servant,

(Signed) WYNDHAM R. DUNSTAN.

Colonial Secretary,

Bloemfontein.

Mr. W. R. Dunstan—[COTTON GROWING IN THE O.R.C.]

APPENDIX XXIV.

MR. IVY.

LETTER FROM MESSRS. SHAWS, LTD., AS TO BROOM AND BRUSH MAKING.

32, Hanover Street, Manchester,

3rd June, 1904.

Dear Sir,

Replying to your letter of the 9th May. We think there is great scope for the Brush Industry in the Orange River Colony in South Africa, as we understand that, at present, all Brushes used there, and in the other States of the Colony, are imported from England and Germany, the latter being of very inferior quality. The plant necessary to commence this industry, on a small scale for commencement, would cost comparatively little if hand labour were depended on, and this we should recommend for beginning, excepting with regard to the working of wood, which would be done by power. We would advise that a Syndicate or Company should be formed, and the necessary Tools purchased. We would look out a suitable man for the management and development of the work, and would provide all that would be necessary for the equipment of a small works.

We should require payment against documents through a London or Liverpool Bank for the material and tools required, and as the industry developed with a good manager on the spot, additions might be made from time to time according to the requirements of the business.

If our suggestion is acted upon, we would ask for the dimensions of any small factory that may be selected for the purpose, and would give all necessary advice as to the arrangement of it. A good deal of the work in England is done by girls and women, but a large number of men are employed and a Trade Union exists for regulating the wages and the number of male apprentices. Female labour is practically unrestricted.

The materials used in brush making are primarily the bristles of the wild boar, which are imported from Russia, India and China. They are prepared to some extent before they are exported from these countries, but again dressed here according to the various requirements of the manufacturers. We should think that there should be supplies in the forests of Africa, and that these ought to be available for export to this country. The shorter bristles of the hog are used for making into curled hair for upholsterers' use.

Fibre is imported from Mexico and is largely used in the manufacture of brushes, also cocoanut fibre and various other fibres from various countries. With the exception of the Mexican fibre, which is known as "Istle," we do not think that these are cultivated for the purpose. A number of brooms are made in England, and a much larger number in America, from the plant known variously as "Sorgho" in Italy; "Broom Corn" in America, and "Millet" in Australia. The principal supply used in Europe is grown in Italy, which is cultivated for the purpose there and also in America, and we should think that this article may be grown in Africa.

Messrs. Shaws, Ltd.—[BROOM AND BRUSH-MAKING FIBRES.]

Messrs. Shaws, Ltd. —[BROOM AND BRUSH-MAKING FIBRES.]

We obtain large quantities of Piassava from the West Coast of Africa, chiefly from Liberia, which is used for what are known as bass brooms, for street and stable sweeping, etc.

We should be glad to know what assistance the Government would be prepared to give to promote the establishment of this industry in the country.

We should be glad to give any further information that may be required, and in the meantime, we remain,

Yours respectfully,

SHAWS LIMITED.

EVIDENCE OF MR. HORNBY ON FLOUR-MILLING, MAIZENA, SEMOLINA, ETC.—25th March, 1904.

I have had experience in Europe in the making of Semolina, Maizena and other products, but in my father's business here we have never gone in for these branches. Our reason for not combining these with our flour-milling business here is on account of the wheat required. For semolina you require a particular kind of wheat—a very hard kind which is grown in Russia—that is the only wheat which will suffice for the purpose. It is known as the Taganrog cone. The wheat grown here is too soft. Another difficulty is the port is only open four or five months of the year, so that all the wheat for the year's supply must come out during these months. The wheat grown at the Cape is very soft, softer even than that grown in America, which is too soft for semolina. Semolina is manufactured with a minimum amount of flour. It is wheat purified, the richest part of the berry broken up into small particles and purified, practically crushed wheat with the impurities removed. Flour is ground, but semolina is crushed. It is split in two and gradually reduced; it is the cream of the wheat.

Macaroni and vermicelli are practically the same thing with the exception that macaroni is the larger size, and vermicelli the smaller size.

The semolina is taken straight from the mill, made into a stiff dough, put through a machine with various sizes of dies in it, pressed, then taken out and put into the sun to dry; it is always sun-dried, not by hot air. In Italy it is entirely Russian wheat they use, nothing else. When the semolina is made with a softer grade of wheat, if it is stocked for say six months it begins to pulverise. In the Italian ports they consume pretty well all the Russian wheat. It is the only country I know where they make macaroni.

> Mr. Meiring.—We had macaroni made from the Free State Wheat some years ago, but it did not last.

Russian wheat is not even used in England. They use other imported wheats. I do not know if Taganrog wheat could be grown in this country. I should say it would be a matter for experiment. It might tend to soften and deteriorate; it would require to be acclimatised. These Russian wheats are grown under snow, and you get a hard wheat in consequence. Manitoba wheat is also hard, grown under snow.

With regard to Maizena, I cannot say a great deal on that. I have had no experience in it at all. I know it is purified from the best mealies, the best Indian corn, the white bread mealies—as long as they are not too hard. It is precisely a mealie flour. Maizena and corn flour are one and the same. They have a sharp gritty feel, not like flour. You could not bake bread from it; it would not bind, it is too short.

Biscuits could be made here very well. The flour we produce here from the wheat would be more suitable for biscuits than bread-making. The wheat here is not too strong, and the colour is not too good. As a biscuit-making flour it would be quite satisfactory. They do not require any great strength, you can adapt any kind of flour.

The Basutoland wheat you might term a medium hard wheat. We have made some excellent flour from Basutoland wheat, and some very bad. It varies very much. It is not merely the berry inside that is hard, but the husk. The flour is a clay colour, but occasionally you find it very good. The reason of that is because they use the same seed year after year. I do not think it would be advisable to produce starch from wheat. It is principally made from the potato.

I have no experience in crushing oats, or oat-meal. I think the Colonial oats would be quite suitable. I do not see why we could not grow the Scotch white oats. As long as the oats are large and have a good big berry, that is the main thing. For rolled oats, the husks are taken out by machinery, then it is pressed between smooth rollers. The oats are dried to a certain extent. Quaker Oats are rolled oats flattened out. It wants a fairly large berry. If there is no berry there is not much meal. The ordinary meal is ground husks and everything—the husks separated out afterwards.

Kaffir Corn we used for meal—for porridge. It is a good price.

I think Russian wheat should be landed here much about the same price as American wheat. I do not know the price exactly.

The Taganrog wheat could be ground into flour, but it would be very hard work. I don't think the labour of grinding it would pay. The difficulty in mixing soft and hard wheat together is the grinding. In flour milling you temper the hard wheat down to as near the quality of the soft as possible, and then mix them together before putting them through the mill. American medium is excessively hard. The cost of Taganrog laid down at the ports is about £10 per ton I think. American is 23s. or 24s. a bag.

There is an enormous amount of seed imported, but as I have been out of the country recently I could not say just how much at the present time. In this country they sow the same seed year after year, it is pretty well played out. Barnlet is a medium wheat; it might do well in this country. "Redwinter" is not asked for much, but there is a demand for Walla Walla. I would not say it is absolutely impossible to manufacture Semolina in this country, but there would be great difficulty. The countries which import Semolina and Macaroni are Italy and Malta. The inhabitants live practically entirely on them from day to day. Our South African Kaffir Corn is superior to other Kaffir Corn.

Samp is the mealie with the husk broken and the germs taken out, done by sweating and steaming it, and drying it. People sometimes call crushed mealies Samp, but that is not quite Samp. We could not do it here, we could crush mealies and purify them, but we could not make what is really called Samp. It requires special machinery for it. They have machines for this in America. I don't think there would be sufficient demand to warrant going in for it here. It costs about 22s. 6d. a bag imported—a bag of about 180 to 190 lbs. The price of Samp does not fluctuate much, perhaps about 9d. to 1s. a bag.

Colonel McLaughlin.—At a season when the mealies were cheap it might pay to make Samp if you had the machinery. If the mealies are 15s. a bag just now it would pay to make Samp. You could always get from 22s. to 23s. a bag.

In America they are getting a very high rate for Samp. At present the mealies are sold under 5s. a bag.

Biscuit-making would not employ much labour; it is mostly machine work, almost perpetual motion. My father did think of starting biscuit-making in conjunction with our flour-milling, but the idea never matured. If they can make biscuits in the Colony, I don't see why we should not make them in the Orange River Colony.

Mr. Meiring.—The Government might support it by a bonus just to prevent our importing it.

A biscuit factory pays best in connection with a mill. It is just a matter of additional machinery. Of course you could make them entirely by hand, but I think it would hardly pay. There would be difficulty in competing with the machine made article. We have not tried it at all at our mills. The flour used is a lower grade than we usually make for household purposes. The difference between a really good and a cheaper biscuit is in the quality of flour used, also in the quality of the sugar used, the butter, baking powder and the other ingredients. It is only from imported wheat that we can make the best class of flour.

EVIDENCE OF MR. HORSFALL ON WHEATS, ETC.—18th July, 1904.

Q. 1. You are representing Mallett and Co., Milling Engineers at East London? Exactly.

Q. 2. Have you put up any mills in Cape Colony and in this country? We have erected numerous mills at Leeuw River, Lovedale and other places. I diagramed mills originally when I was expert for Turners in England before I came out here. The largest mill in Cape Colony, Daniels and Sons, of Cape Town, is our plant. We have also erected mills at King-Williams Town.

Q. 3. Do you erect mills to work on your account? No.

Q. 4. You only work under orders? Yes, for clients. Of course my position with Mallett and Co. is as milling expert and representative. I was expert for Turners in Ipswich for some four or five years, from 1892 to 1896. I have been registered Teacher of the City and Guilds of London Institute in Milling Technology.

Q. 5. Then you have a thorough knowledge of all kinds of wheats and grains? Wheats I have made a special study of for the last 25 years. Of course England as a free port is open to receive wheat grown in any part of the globe. There is such a diversity and so many different varieties of wheat coming into England that it requires a special knowledge of

each variety for blending and milling purposes. As a matter of fact there are not two wheats grown in different countries possessing the same characteristics.

Q. 6. The same wheat grown in one country and in another are either hardened or softened by the climatic influences? Exactly.

Q. 7. The soil affects it? Yes, the soil and climate are the two principal agents I consider. The biggest surprise to me was to find in conversation with a friend in Cape Colony, who is of one of the leading firms to find that they were advertising in the papers as special wheats the "Standard Red" and "Rivets," grown in England. Rivets wheat is about the lowest class of wheat an English miller would buy. He would only take it as a cheap wheat for reducing his mixture. At the present time flour milling is under a cloud in these Colonies. Of course this nuisance of a Customs Convention has upset the milling trade to a very great extent taking the 2s. for flour and 1s. for wheat. The loaf is now no larger or cheaper than it was before the Customs Convention came into vogue. Assuming that it gets back to its normal condition before millers could hold their own they would need to be able to compete with flour that is imported, American Heartspring, Pacific Coast Flours, and Australian Flours. There are really only two classes of wheat grown at the present time, No. 1 Manitoba, and a fine class of Russian Wheat capable of producing flour to compete with this Heartspring wheat flour. You have nothing in this country that could do it.

Q. 8. We have found there is no Wheat grown in this country suitable for Semolina or the products of Semolina? Not for making purely Semolina. Of course a great deal of that is made from maize.

Q. 9. The Basutoland wheat is used for mixing in this country? Yes, it is to a certain extent, but it is not cleaned sufficiently, but that might be improved a great deal. For seven years I was manager for Messrs. Webb, the largest seed farmers in England. They used to put out seed to grow on 20,000 acres of ground. I used to value every bag of seed wheat that was grown by the farmers. I had to put the milling value on it when they brought it back. There is not a sample of seed wheat sown in this country that would compare with what they offered there. The reason of this is that there they go through a system of testing seed as to their germinating powers, their growing properties and yield, also treating them in their warehouse with the various machines for eliminating any smaller grain that is not capable of producing the very best seed wheat.

Q. 10. Now the Wheats you would recommend for this country are those you have just enumerated? What I should strongly advise this Government to do with regard to the Agricultural Department would be to secure about half a dozen samples of No. 1 Hard Manitobas, No. 1 Hard Duluth, Choicest American Soft Winters, the choicest sample of Russian Zema, the best sample of South Australian, sample from River Plate, Argentine, and two samples from India. The No. 1 Hard Manitoba being grown further north has rather a tendency to be liable to rust. I should say English Wheats

imported into this country are about the last that ought to be cultivated for the simple reason that the climate is so different from the climate in this country, and that is one of the great features in Wheat growing.

What I would venture to suggest would be to get these samples of Wheat bought on the English market. It would be an easy matter to get them cleaned either in England or here, preferably in England, there is no use paying carriage on dirt. Sow a small plot of each sample of Wheat, and when it comes to maturity, then have it tested as to flour yielding properties, and gluten, and that sort of thing with the original seed. I would not advise you to sow the whole lot imported at first, but just a small plot, then test the original with the first year's growth, and see how it compares. You get a better object lesson in this than in any other way.

Q. 11. With regard to your machinery is it possible to put up a mill that would give the best meal, the best flour, the best maizena at one and the same time? No. Maizena of course is corn flour. It is simply a registered name for a special brand of corn flour—made from white mealies. It is quite possible to make it in this country, but it wants a plant to itself. The brewery trade in this country seems to be going ahead. We have special plant in England for making flaked Maize for Brewers' purposes. I made enquiries a month or two ago from one of our clients what they used. Well, they import this flaked Maize from home, it costs them 25s. for 336 lbs. in England. There is freight to pay on it, there is duty to pay on it. It is just as easy to erect a plant in this country to produce that same flaked Maize to compete with any English Flaked Maize there is, made with the same machinery, and at the price which Maize is at to-day, 8s. a bag, it shows a good return. Of course it is true there is only a limited demand for flaked maize, but that is always improving. You could make corn meal with the same plant, and it is possible to make the plant that you could make corn flour on it, or wheaten flour, or sifted meal.

Q. 12. With one plant, how much could you accomplish in the way of different kinds of grain? You could make Semolina, Flaked Meal, Wheat Flour, Corn Flour, and Flaked Maize; it is possible to do that. The plant would require modifying in certain respects. Of course there would be a machine or two you would only require for Flaked Maize, another you would only require for Corn Flour. One or two others you would only require for making Wheat Flour, but the remainder of the machines you would use for every department.

Q. 13. Of course a large proportion of the work would be in connection with Wheaten Flour or Meal—say you have three pairs of rollers for Wheat for instance, would it be possible to adopt these for the working of Corn Flour, or Flaked Maize, or for Crushed Oat Meal or Rolled Oats, or for Fine Oatmeal? For Oatmeal you want a plant purely and simply for itself. I would not recommend an Oatmeal Plant to be used for any other purpose. For instance there are certain mill stones required in some of the operations, there are millstones required in shelling Oats, the construction of the stone is different, so that under these circumstances it is not advisable to adopt Oatmeal milling machinery in connection with any other, but for

Wheat Flour, Maize Meal, Semolina, Corn Flour, or Flaked Maize, the machinery, generally speaking, might be modified and arranged to work one in with the other in one plant. Of course in introducing an industry like Flaked Maize there is only a limited demand for it, but at the same time it is a growing demand, provided you once convince the brewers in this country it is possible to supply equal to what they import. One great advantage is, at home they like the Flaked Maize as fresh as possible, here there is a three weeks' journey on the sea with it. I find at home they can use nearly 50 per cent. Flaked Maize to 50 per cent. of malt.

Q. 14. Do they use that in the place of Hops? No, Sir, there is dextrin in the malt which converts too much starch into sugar. There is a surplus amount of dextrin, so that by adding Flaked Maize to the Malt it will also convert the starch into sugar as well. It enables brewers to make a clearer beer in less time than they would do with Malt and Hops, and it is cheaper than Malt.

Q. 15. You just use the saccharine properties in the maize for assisting the working of the hops and the malt together? Exactly. This surplus product of the dextrin in the malt assists in converting the starch into sugar in the flaked maize.

Q. 16. The sugar assists the fermentation? Exactly. Most of the big brewers in this country are using it. I have been given to understand they are using rice grits, but whether it is possible to get them on to flaked maize I do not know. Being a Colonial product, travelling at Colonial rates, there is everything in favour of it. Personally speaking I have great confidence in the arrangement of a plant on these lines.

Q. 17. Have you seen any Basutoland wheats? Yes. They had a very good crop in the Malmesbury district of Cape Colony. I think it was grown from the River Plate seed, but it was a soft wheat, it had very little glutenous property about it. There was no cleaning process gone through or anything of that sort. There is not so much difference in the value of wheats as in England. Last year American No. 1 Duluth or No. 1 Manitoba was at a big premium because they had a short crop. As a matter of fact American Spring Wheat Millers will scarcely be able to keep their mills going till next Christmas.

Q. 18. Do you agree with me that these harder wheats would take a longer time to deteriorate into softer wheat in Basutoland than in this Colony? That may be so, I daresay there is something in that. I think if we could get the farmers to assist us in growing harder wheat we could retain it longer. The same wheat with the same seed on the same soil is bound to deteriorate.

Q. 19. Have you ever heard of barley wheat? No, I am afraid there are not many good characteristics about it. Hardness does not constitute the chief characteristics of the best kind of wheat.

Q. 20. What is the best wheat for biscuit-making? Soft wheat, for instance American Winters. Even English wheat is principally made into Huntly and Palmer's biscuits.

Q. 21. For instance a good sample of our ordinary wheat would be good for making biscuits? Yes, if it were properly cleaned, a soft wheat will do for biscuits.

Q. 22. I suppose the cleaning is essential? Oh yes. Wheat well cleaned is half milled. In England they have adopted what the Americans sarcastically call the "laundry system." In America they have those elevators, which take it and wash it, and scour it well. When it is turned out you would scarcely believe it to be the same wheat. To a certain extent millers in this country are open to education so far as wheats are concerned. I think this is a thing which is well worth thrashing out, this question of seed.

APPENDIX XXIVA.

LETTER FROM TOWN CLERK, BETHLEHEM, AS TO MILLING INDUSTRY.

The Secretary,
Industrial Commission,
Bloemfontein

Town Office, Bethlehem,
Orange River Colony,
26th November, 1904.

Sir,

I have been instructed by my Council, to ask you, that in the event of applications being made, for a suitable place, for the purpose of establishing any Industry, to communicate with the Municipality, Bethlehem, as there is a good opening here for a good Roller Flour Mill or Creamery; more especially the former; this Council will be only too pleased, to offer all possible facilities to any suitable Industry being started in this Town.

I have the honour to be, Sir,

Your obedient servant,

(Signed) F. F. ARCHBELL,
Town Clerk.

LOCAL MANUFACTURE OF INKS.

EVIDENCE OF MR. HEWITT—7th July, 1904.

The Chairman explained to the Commission that Mr. Hewitt had a recipe for ink which he claimed to be better than any in the market at the present time, and that some parties were desirous of taking this over from him for the purpose of manufacturing the ink in this Colony if some assistance could be given them from the Government.

Q. 1. Are all the materials required available in this Colony? Practically all; the vegetable extracts could be had here. A few chemicals would require to be imported.

Q. 2. What are the chief components of ink? Iron and gall, and some acids derived from the vegetables. These, I think, could be grown here. The only material which would necessarily be imported is dye, mostly aniline dye—that would have to come from Europe.

Q. 3. Would there be a large proportion of dye in it? No, that would just be a small matter. There would be no difficulty in the manufacture of ink of all kinds, copying ink, writing ink, and red ink, but there would be the usual prejudice against Colonial manufacture to be got over. There is no question as to the quality of the ink.

Q. 4. How long has it been in use? I have been using it myself since 1896; I just make it in small quantities for my own use.

Q. 5. On what scale would you propose to manufacture? We cannot find out what the demand is, but I think that there should be a demand in this Colony for three or four hundred gallons a month. The Transvaal I have no doubt could take it.

Q. 6. How much cheaper could you put it on the market than Stephen's Ink? Stephen's Ink is wholesale at the coast 10s. a gallon (in quart bottles) and it would pay to produce this ink, provided you had sufficient demand to get over the initial working expense, at 3s. 6d. to 5s. a gallon—any competition at all could be met. I am not quite sure of the price of Stephen's Ink in the Government Contracts. Supplied in bulk they might come down to 5s.? I don't know, I have no definite information.

Q. 7. How would the ink be supplied in large quantities? In barrels—30 gallon barrels, gallon jars, or quart bottles. The chief cost of ink is the containers. There is so much carriage on the bottles and water; the price of Stephen's Ink, is the cost at the coast.

Q. 8. What would the rates on ink be? 7s. 1d. Of course it is supplied in stone bottles. It is put in glass now also.

Q. 9. To make it on commercial lines it would be necessary still to import the jars? The idea is not so much to cater for the small retail trade as to supply the Government, where we should use barrels. The assistance desirable from the Government would be a piece of ground set apart for it, and

some assistance perhaps in providing us with one of these settler's houses, which would form offices, and some assistance in the way of putting up sheds. Of course there must be a water supply; that is most important.

Q. 10. I suppose the quality of the water has something to do with it? There would require to be settling tanks. The water would have to be purified. Impurities could be precipitated with alum. We would hope to turn out 1,000 gallons a month.

Q. 11. 1,000 gallons a month, selling price 4s. a gallon, that would be about 25 per cent. lower than imported ink? Of course the cost is a very relative matter, or my figure of Stephen's Ink might not be quite accurate. This ink possesses considerable advantages over Stephen's. It is a better ink.

Q. 12. What capital would be required to start this? I should say £500, unless great expense were gone to in building. That is for plant and materials only, if the buildings were provided, or rented from the Government.

Q. 13. How many hands would it employ? It would take two white men and half a dozen girls. That is for a production of 1,000 gallons a month, but it would depend on what class of business was catered for; if a retail trade there would be a larger number employed—with small bottles of ink, but one would not look to that so much in the first place.

Q. 14. £1,500 including buildings would be about the actual requirement. A settler's house is worth about £300. That would be just for offices? You must have offices and store room; then you want an empty bottle shed; washing shed, a place for making, and a bottling room.

Q. 15. Does the heat affect the ink if you have an iron place in the summer? No. It is much better that the ink should stand for a week or two in tanks to allow the air to act upon it, and to allow a deposit to take place, and then to strain it off through filter bags.

Q. 16. Would you encourage the growth of the vegetable amongst the people here, or would you grow it yourself? I don't think it would be advisable to take it up ourselves. We could obtain it from whatever local source there is. Other things could be taken up in time—ordinary stationery requisites, stickphast and gum, and all sorts of things that are made—side lines.

Q. 17. And you propose that the Government should provide the buildings? I think that would be the most workable plan unless anyone came forward to put down a considerable amount of capital to run it.

Q. 18. Do you want to rent a house, or do you want to take it on instalment principle? Either of these plans would do. Much better if one could start off with a clear place to begin with, provided by the Government to be paid off on some system, a ten years system or something like that. As regards the business details of it, I should not arrange that myself, my own business keeps me from that. Mr. Raper would do all that. I should help them where necessary with my advice, but that would be all.

Q. 19. What sort of men would you employ? Mr. Raper would run the office and see to the travelling. He would want a white man to look after the work people. He would want Kaffirs for rough work, white girls for bottling; it is difficult to say before everything is started, what staff would be required.

Q. 20. What is the proportion of the vegetable matter you would require—any considerable quantity? Is the acid extracted by chemical process? There are various ways. One could make direct from the vegetables themselves, say from galls. The easiest way is to extract from the vegetables the tanic and gallic acid, and work from that; speaking from memory the proportion might be 3 oz. vegetable extract in one gallon.

Q. 21. When you say 3 oz. of the vegetable acid, that means after it has been extracted—the extracted acid? Yes.

Q. 22. Would that be all tannic? They are very indefinite. There is another acid which has been extracted from galls. A little heat or different operation will change them. I could not say definitely that you must have absolutely a certain proportion of one kind of acid, as long as you get what gives the proper colour. Given the Government support, let it have a fair chance in the contracts, there is no doubt that it would hold its own. We would need to get over the prejudice of the man who supervises the buying.

Q. 23. You say the cost is about 3s. 6d. a gallon? It could be sold at 3s. 6d. at a profit. That estimate I worked out on a minimum of 300 gallons a month—hiring premises. It could be produced cheap enough to pay well if the market could be obtained. If all the supplies are coming through the Crown Agents I don't think it is worth while putting it on the market to supply a retail local demand.

It was arranged that Mr. Hewitt should make a small quantity of ink, to be submitted to the various Government offices for trial, and reported on by the Heads of the different Departments.

In the ordinary way one would keep the ink for some weeks, and always a large supply in settling tanks. To make a small quantity and then bottle it off, is putting it to a rather severe test, but I am quite prepared to take all these risks; produced on a proper commercial scale it would be better.

Q. 24. Have you made any of it in the form of powder? No.

APPENDIX XXV.

REPORT OF THE SUPERINTENDENT OF STATIONERY ON MR. HEWITT'S INKS.

Colonial Secretary.

Both the inks are good, but particularly the blue-black writing.

I confess to having started with an involuntary prejudice in favour of the well-tried Stephen's writing fluids, but after testing and after a week's use of the local ink I would now be prepared to recommend the adoption of the latter.

Superintendent of Stationery—[REPORT INK.]

But I would suggest that samples be referred to the Government Laboratory for analysis and report on the chemical effect of the fluid on paper-fibre.

I enclose various papers which I have used in rough tests here.

In my opinion the red ink is equal to Stephen's, while the blue-black is, if anything, superior. The red allowed to dry on a steel nib, leaves a rather heavy deposit—probably corrosive.

I have no fault whatever to find with the blue-black; it writes fluidly, does not deposit in the inkstand and it copies well in the press. It stands soaking in water far better than Stephen's does—in fact soaking seems to intensify and fix it.

As to commercial considerations, the main ones are packing and price.

Stephen's inks are now put up in square glass bottles each packed separately in corrugated paper. This is an enormous convenience; it saves freight, and is neater and cleaner, and permits the safe transport of even single bottles.

The home cost of Stephen's inks, as supplied to us through the Crown Agents, is as follows:—

B.B. Writing, per case, cases of one dozen, 32 oz. bottles, 22s. less 25 per cent. and 2½ per cent.

B.B. Copying, cases of 1 doz. 32 oz. bottles, per case, 30s. less 25 per cent. and 2½ per cent.

Scarlet, cases of 1 doz., 32 oz. bottles, 35s. less 25 per cent. and 2½ per cent.

I should like to have samples of the local B.B. copying ink. Most makers seem to fail in this and I have not yet met anything to equal Stephen's or Antoine's.

(Signed) JAS. G. W. GORDON,

Supt. Govt. Stationery Office,

25th August, 1904.

HOME INDUSTRIES.

EVIDENCE OF MR. PIRNITZER, Austro-Hungarian Trade Commissioner.—

3rd May, 1904.

Mr. MEIRING.—I had a most interesting conversation with Mr. Pirnitzer this morning when he kindly came over to see me. He comes from Hungary, where within the last few years they have started a great many industries. He himself will tell you that about thirty years back they had absolutely no industries in the country, now they have not only large factories, but they have Cottage industries very well developed, and which are still increasingly being developed. They have also instituted the principle of having teachers to go about and instruct adults in the working of the industries, and they have also established schools where the children are taught, and the Government supports these. Some of these industries are worked under Government supervision, with Government aid, and the Government undertakes to sell all the products, especially with reference to Pottery. The Government has established kilns in various parts of the country, and the people round about make pottery, mostly artistic pottery, and it is brought to the district kiln to be baked. The Government pays the people at so much per article, and they work under the Government, the Government taking the products. They have established woollen and cotton weaving also as a Cottage Industry.

Q. 1. Has the Government also sent experts to teach the people in this? Oh yes. The Cottage industries are carried on chiefly in the poorest districts where agricultural and pastoral pursuits could not be carried on to great advantage. It is mostly in the winter months they are employed in this way. In the summer months they go abroad as workmen.

Q. 2. Can you give us any idea from statistics what the value of the products amounts to of these cottage industries? I could not give quite an exact figure, but I think it is at present three to four hundred thousand Pounds sterling—that is solely the cottage industries.

Q. 3. What are they mostly represented by? The strongest line is weaving, then comes perhaps broom and brush making (also a cottage industry) wood carving and wood work, ordinary kitchen furniture, leather industry, harness making, boots and shoes—these, I think, are the principal lines.

Q. 4. What are the brooms made of principally? Well, I think you know these brooms imported from America. The same, only not green but yellow material—broom corn, I think it is called. It is specially grown for the purpose. Hungary is producing broom corn in such large quantities that it is shipped to America. The broom industry is so strong now that it is self-supporting. The broom-makers bring their products to the market and sell for themselves.

Q. 5. You have basket-making as an industry too? What do they make the baskets from? Yes, it is a very large industry. We use the osier willow

tree. We grow the willows specially for it. The Government aids the willow-growers by offering bonuses. It is grown along the rivers.

Q. 6. How do they arrange their bonuses there, or assistance for these people who plant the osiers? There are various forms. The Government has gardens of these trees supervised by their own employees, and the people are supplied with osiers from these gardens, or they might give them the seed or plants. If they can afford it the people pay a nominal amount for these.

Q. 7. In what way are the other industries started? They are mostly started by sending teachers, by establishing schools by giving to the poor people a certain amount of money in advance in order to enable them to buy the stuff they want, or sometimes the Government supplies the stuff and takes the ready made article.

Q. 8. Do the towns and villages help? Oh yes, mostly in money. The Government gives the money to the various Chambers of Commerce—at present it is about £1,000—and for this amount the Chamber of Commerce buys the ready manufactured article and tries to find a buyer for it again. The most difficult question is always to get a market for the articles. It is always a great help if they can dispose of the goods to purchasers who can give them cash at once. We very often have exhibitions mostly of artistic work. work. Then there are Hungarian Depots in London and Paris, where the best articles are sent for sale. They are mostly very quaint and original designs, and therefore find ready sale.

Q. 9. Is Hungary a densely populated country? No, not very, about twenty millions. The country is perhaps not bigger than the Transvaal.

Q. 10. How do they start the different industries? The different communities apply to the Government for help, or the Government sends round to see what is wanted. There are mostly certain germs of industry in the different parts of the country, and the Government endeavours to develop these by sending teachers, establishing schools, and helping to sell the articles made. It would be very difficult to give an exact scheme, because in everything it is different. Sometimes it is the establishment of a new industry, very often just the development of one. Broom and basket-making is quite new.

Q. 11. About how old? The broom-making about 15 years' old, basket making somewhat over that

Q. 12. The artistic pottery is quite new? About seven years since it started, but it has now got a very strong hold. The people take to it very readily. The Government gives a certain premium for the best pottery it finds, and distributes these among the people as model patterns.

Q. 13. Are the schools free, or do the people have to pay? They are mostly free. The Government spends £70,000 a year for all the Cottage Industries. Sometimes we have exhibitions of the work, then of course it expends more, but generally it might be taken at that figure.

Mr. Pirnitzer—[HOME INDUSTRIES.]

Q. 14. Are the teachers mostly Hungarians? Yes. They are all Hungarians who were sent out by the Government to learn these industries.

Q. 15. Are these schools exclusively for the industries? Yes. I think there are something like 40 or 45 schools, most of them working only during the winter months. In the summer months they are all employed in agricultural work. No, I should not say they are night schools, they are mostly day schools. The older people are taught by travelling teachers, the younger people at the schools. The travelling teachers go to certain villages, and there it is advertised that on certain dates a certain kind of industry will be developed. For instance there might be an exhibition of pottery-making and anyone who likes can attend and the people come from all around the neighbourhood.

Q. 16. Do they go in for fruit preserving? No, not much, we export most of our fresh fruit; we get a better market for it in that way, we send it to Germany to France, and even to England. The railways have special waggons built for the exportation of fruit—they are insulated trucks fitted up with shelves where the fruit is laid without being packed too closely.

Q. 17. What made the Government go in so strongly for these Cottage Industries? Our people are very poor.

Q. 18. Was it on account of the agriculturists being knocked out of the market by competition? Mostly that. Twenty or twenty-four years ago we were able to send out wheat to England. Since the American and Argentine competition started it has become impossible.

Q. 19. What wages do you pay these teachers. These teachers are principally intelligent artisans, perhaps their wages might be 7s. 6d. per day.

Q. 20. Is it not difficult to supervise all these wandering teachers. No, I don't think so, the Local Authorities look after that and send in reports. In the different districts the Secretary of the Chamber of Commerce is appointed to look after the various industries. The difficulty in this Colony I should think would be to produce the article cheaper than the imported article.

Q. 21. Do you think that the Hungarian authorities would be willing to give us some written information on the subject? Certainly, but unfortunately it would be all in Hungarian. Anyway I shall be very pleased to send you any printed material I can find in English. I am going home very shortly.

Q. 22. Are the Hungarians a well educated people as compared with the people here do you think? They have a higher education, they are naturally skilful.

Q. 23. How does the Government encourage industries, excluding Cottage industries? By bonuses on production, by low taxation on raw material, and by cheaper railway rates. They must employ a certain number of workmen; the work is all inspected by Government.

Q. 24. Does the Government give the ground? Either the Government or the towns. They are always able to secure free grants.

Q. 25. Is there a lot of weaving exported? No, nothing exported, it is all for home consumption.

Q. 26. What do they export to this country? Timber, beans, peas, mineral water, pottery, bitter waters, enamelled ware.

Q. 27. Is your system considered a success? Do you think the whole scheme has paid the Country? I think it is an absolute success. I am sure it has paid the Country.

Q. 28. Was the initial outlay very large? I don't think it has been very large. The scheme was begun only on a small scale, and with lines from which some immediate return could be expected, and has gradually increased until it has reached the present stage.

Q. 28a. Do you see any opening for a similar scheme here? I think the great drawback here is you have not enough population. It would be difficult to create a scheme for the sale of the articles.

Q. 29. Do you export much to other countries with the exception of the goods you have already mentioned? We export almost everything to Austria. Our articles go there free from duty; we are in the Austrian Customs Union.

Q. 30. Have you heavy protective duty? It is fairly heavy.

Q. 31. What is your ad valorem? I think it would work out about 30 per cent. ad valorem. Almost all the raw material necessary for certain industries are almost duty free.

Q. 32. Do you cut and sell much wood for match factories. Oh yes. The wood for match making we are exporting to Germany. Match making is a fairly big industry. We export our ready made matches to Turkey, Bulgaria and Servia.

Q. 32a. Your boot and shoe making, is that for export also? No, not in Hungary. In Autsria they are exporting. They are hand made, that is the reason they hold their own against German or American boots. That is also a home industry in Vienna. The men deliver their articles every week direct to the exporter. They get from him the leather and all parts for the shoes.

Q. 33. The tanning and preparing of leather must be a big industry? Yes, we prepare the skins for boots, shoes and harness.

Q. 34. Do you know what kind of tanning is used there? We use at present almost exclusively the "quick" (chemical) tanning, where the leather is ready in about 8 or 10 days.

Mr. Pirnitzer agreed to write with any further information which occurred to him, and with any papers which he could lay hands on in connection with the Cottage Industries.

EVIDENCE OF MR. INGLE on Basket-Making.—4th August, 1904.

In introducing Mr. Ingle to the Members of the Commission the Chairman stated that Mr. Ingle was an expert in the work of basket-making, that at present he was engaged in teaching this industry in workshop and class at Lovedale, Cape Colony, where he had been very successful for the last two years, and that Mr. Ingle had expressed himself very willing to give every assistance in his power to promote the industry of basket-making in this Colony, and that he had also offered to supply from Lovedale osier cuttings for planting, if required.

Samples of baskets made from osiers grown in Lovedale were submitted for inspection:—luncheon baskets, portmanteau basket, work basket, small market basket, etc., etc.

MR. INGLE:—The rods are prepared in white and buff. The buff basket is always finished with a coat of varnish.

Q. 1. What dye do you use for buff colouring? None whatever. The natural dye in the bark is boiled into the rod in the process of buffing. In talking this morning to the Chairman, I suggested that I would make a statement regarding the elementary method of cultivating the osier, and since I saw you, Sir, I have written the following brief statement:—"For a new plantation of osiers the new set must be cut from the standing crop. A one year old set but two or more will serve, one year old preferred. Nearly the whole of the natural rod may be cut into lengths of 18 inches for planting, but not more than two sets cut from the but of the rod preferred. Care must be taken in planting that the buds of the sets point upwards; 12 inches of the set should be below the soil. The sets should be planted in rows 18 inches apart; the rows 18 inches apart also. The first year will produce but a thin crop and is usually left standing until the second year for the sake of the young sets and their tender roots; this does not appear so necessary in South Africa as in England. The rods may be cut from May until September, according to whether it be desired to have them peeled or unpeeled, or if peeled, whether white or buff. It the rods are to be used for rough common brown work they may be cut early, dried in the shade if possible, and when quite dry, store them in a dry place out of the weather, dark and underground most desirable. The new rod may be worked, but the seasoned rod of twelve months' storing is much preferred. Peeled buff rods are obtained by cutting the rods (cut at leaf fall preferred) packing them at once while green and full of sap into a tank boiler, cover and keep covered with clean water, and boil for ten hours. Peel as soon after as possible, thoroughly dry, and bundle and store as above.

"Peeled white rods are obtained by standing the green cut rods, tied in small bundles in a water furrow, to remain there until Spring leaves appear and they are full enough of sap for peeling; then pull through a brake that the peel only may be broken for stripping, dry thoroughly, bundle and store as above.

"The Brake.—A piece of half or five-eighths of an inch steel rod, turned into a six or eight inch circle at base, the steel brought parallel from and flat with the circle for 16 inches; the ends cut and curved outward one

inch from top. Steel rod needed about five feet for each brake. The brake must be firmly fixed so that the osiers can easily be pulled between the straight parallel steel."

(Shows rough sketch of brake).

Q. 2. You say the time to cut the rods is from May to September, that at the Cape is your rainy season? No, not in Lovedale. In the Eastern Province our rainy season is different from the Cape. We have been suffering from drought now for many weeks. Last year we had a serious drought until the middle of October. The leaf falls about April. This year I took particular notice and marked a row or rods, carefully measuring them, and found that no further growth followed after March 17th.

Q. 3. And then it commences again after July? Oh no, no more growth until September or October.

Q. 4. Will the Weeping Willow answer? No, it does not work into a basket at all well. It is too brittle. It is from the original willow that the willow rod has been cultivated, but the willow that we use in our trade is a distinct cultivation.

Q. 5. The branches of the weeping willow grow much longer? Yes, but after peeling and drying them, they are altogether too brittle to work .

Q. 6. You are constantly cutting down your crop and constantly replanting in the season? No, we are not constantly replanting. The crop once planted, will stand for ten or twelve years; it is only the shoots we use. I would not advicate their being used after twelve years, I would prefer to grub up and replant after that time.

Q. 7. Is it necessary to plant them in the water absolutely? Oh no. It is very desirable that they should have plenty of water, and flooding occasionally does not do them any harm.

Q. 8. Are they not very much of the nature of the Weeping Willow and the River Willow? As far as I know the family of willow rods comes from the old Willow, but of course there are now probably two or three hundred varieties of the Cultivated Willow.

Q. 9. They would be more or less subject to the same climatic influences? Yes.

Q. 10. Where you could grow the ordinary Willow you could grow the osier? I should say so. At Lovedale we have two small plantations, one of Osiers and one of Willows situated on very dry land. The Osiers never get irrigation, never anything but rain. The Willows are a younger crop just planted last year, but for weeks they never had any water. I did not water them because I did not wish them to shoot during the winter time.

Q. 11. Could you supply us with the plants and cuttings. We could supply you with any quantity of the Osier cuttings. The Willows we could not supply in so large a quantity yet. Later on we might be able to do so.

Q. 12. In ordinary course how is the Osier treated after it is cut? In England it comes straight from the rod grower to the basket manufacturer in its

stored condition as furnished in my remarks. Then it is served out to the basket-maker and he will soak the large rods perhaps for three or four hours, let it lie and mellow covered over all night, so that the rod will be pliable in the morning. He can work all day with the rod after that. After that the rod will sweat and go bad if he does not get it worked up. Smaller rods only need water in proportion. Half-an-hour or so would do for smaller rods; with that they would be sufficiently pliable for working.

Shows skein made by dividing the rods into three or four parts, the centre taken out, and skeins made uniform by using knives to cut required width.

Shows also mats made from Mountain Grasses.

Q. 13. You use only the toughest part of the rod? Yes, the other is waste in reducing the rod to skeins.

Q. 14. I take it it would be as easy to make baskets in this country as anywhere else, provided you have your Osiers? Scarcely so easy, inasmuch that a moist climate enables the basket-maker to keep his material in better order, but in a suitable workshop there is no reason why the conditions should not be almost equal to home.

Q. 15. Does it matter if your material dries when you have once commenced your basket? You can go on working as long as you have a supply of pliant rods. The standing rods will dry. The work must be finished off as quickly as possible or the rods will dry and go out of working order; that is where the dry climate is a slight hindrance.

Q.16. How long would an expert take to make a basket like that portmanteau in normal conditions at home? About six hours.

Q. 17. What would be the value of it at home?—the actual cost price of manufacture, labour and materials? All our work at home is paid by the piece. We have Trade Unions, and as far as the work is uniform a uniform price is put upon it. For making that basket in London a journeyman would receive 6s. to 7s. An employer generally reckons that he has to treble a journeyman's wages for his selling price. A wholesale seller at home could sell that portmanteau at 21s.—that would include cost of material and everything.

Q. 18. An ordinary skilful man can make 1s. an hour? Yes. I would not say that is an average wage, but we certainly reckon a skilled man worth that and more in London. £3 is a common occurrence as a week's wage earned in less than sixty hours. Our quickest men sometimes earn £5 in a week. The usual apprenticeship at home is five years. I might point out that the girl who made that basket (small market basket) made it entirely herself. She has only been in the workshop for twelve months, is fifteen or sixteen years of age.

Q. 19. Is that a first-class piece of workmanship? I would not say that, but it is a very creditable basket. With the exception of shaping the handle I did not touch it. One of the defects I find with the natives is the defect of symmetry and squares.

Q. 20. What price would you sell that for? At Lovedale we have been selling these baskets at 2s. 3d.

Q. 21. What would the cost price of material be? I should say it would be about 7d. to 9d. In London we usually put the value at 3d. per lb. on small buff rods.

Q. 22. Split or whole? The whole rod as the basket-maker receives it from the rod grower. Larger rods come out a little less. There is less labour in preparing the larger rod. A girl in her own home making baskets would require a quantity of large rods and a small quantity of small rods. Judging by the weight I would say that basket would be worth 6d. a lb. Twenty-five per cent. for waste on skeins I think would be enough to allow. The material of that would cost roughly 9d., the selling price would be 2s. 3d., varnished and everything. The luncheon basket weights 3 lbs., made of rods. The handles are framed with wire. The front staple is also made of wire lapped with cane. The cane is sent from home.

Q. 23. Do you get any cane from India? I could not be sure.

(Shows photograph of work in process at Lovedale).

I have made most of the bigger articles shown there; the two tables, the luncheon baskets and the large screen.

Q. 24. How do these chairs compare with Madeira chairs in price? A manufacturer in England could sell such a chair as that at 6s. 6d. Madeira chairs seldom stand the hard wear of our English wicker chair. You might pay any price at Madeira for a chair. Their framing is on a poor principle and they use much deal timber. In this way they can make them cheaper. Their labour is very cheap and they grow their own Osiers.

Q. 25. Do you ever do any real cane work? No, not in Lovedale.

Q. 26. Don't you think it would answer to import the cane and make them here? Yes. Some classes of cane works. What we call the cane chair is made out of the inside of cane. It is principally an American trade. We have never imported any cane to Lovedale. The only cane we have imported is that used in the finishing of luncheon baskets, handles, hasp, noose and staple.

Q. 27. Cane chairs are stronger than wicker chairs? Well, I don't know. Cane seldom grips in making as the rods do. Cane chairs are usually a combination of wood and cane, otherwise it would not be sufficiently rigid.

Q. 28. Do you do a lot of the rush work at Lovedale? No, we have not done much; we have used rushes. When I commenced at Lovedale I found a large store of rush plait which had been imported from England. Much of this has been used.

Q. 29. You have not tried these things the Kaffirs make the mats of? Yes I have. I have gathered them by the river and like them better than the rushes at home. They are tough and reliable. Their uniformity is good, and much of their natural colour may be retained if care is taken in gathering and drying.

Mr. C. J. Ingle—[BASKET-MAKING.]

Q. 30. What plant would be required to equip a workshop?

What tools and their cost would it be necessary to furnish an apprentice with?

What space would each worker require in a workshop?

I. PLANT.—The first item of plant is a long tank for soaking the rods. If twenty-four workers are to use it, it should be 10 feet long, 3 feet wide, and 2ft. 6in. deep; with the possibility of changing the water in it at least twice a week.

In the workshop each apprentice must have a plank or box, and a lap board—(rough drawings herewith)—Plank 6ft. by 3ft., 5in. above floor level. Lap or work-board, 3ft. by 2ft. raised 5 inches at one end. Small box to sit upon about 12 inches high. Beside this, blocks must be furnished for square work at the rate of four blocks to six workers. A block is made of hard wood, 3ft. x 8in. x 4in. cut down centre and two vice screws fitted; used on the principle of a vice to hold the frame of square work bottoms or covers.

II. TOOLS.—Yard stick measure, 2s.; two knives, 1s. 9d.; iron, 1s. 9d.; shears, 4s. 6d.; three bodkins, 3s. 9d.; cleave, 1s.; shave, 5s. 6d.; upright, 5s. 6d. Eleven items. Approximate cost in England, £1 3s. 9d.

III. WORKSHOP AREA.—It is best to sit each worker with back to wall in a space 9ft. by 9ft., 81 square feet area, leaving a centre space of 4 feet through the workshop. Thus to give twenty-four basket makers, only fair room, planking ten along each side and two at each end, a workshop would be needed approximately ninety feet long, twenty-two feet wide, and eleven or twelve feet high.

Q. 31. Supposing we wish to get an expert to teach both the growing and working of Osiers, what salary should we recommend the Government to give or to offer? I do not think you could hope to induce a good man to come out from England under £15 or £20 a month. That is a comparatively low rate, and passage would also have to be offered.

Q. 32. Is there sale enough for your goods? Yes Sir, we have sold a great number of those things.

Q. 33. You could get a ready sale for anything you make? Oh yes. The stock we have on hand, I do not think there would be any difficulty in selling it.

Q. 33a. You do not push it? I have had no opportunity, being of course, at Lovedale the whole time.

Q. 34. Was there basket-making going on at Lovedale before that? Four years previous they attempted it on quite different lines. A man was brought out from England and asked to start a basket factory and teach native boys. He also had charge of a poultry farm and was given charge of the fruit orchard, with the consequence that the basket-making industry proved a failure.

Q. 36. How large is your class? Twelve to fifteen is as many as one can nicely manage. Generally speaking it is a routine of going round the class taking one at a time to show a little and let them go on. That is about the largest number one can deal satisfactorily with.

Q. 37. Would it be possible to teach for a certain part of the day, and make baskets for commercial purposes the rest of the time? I would advocate a teacher being given six apprentices; that he begin teaching these for say six months, and after that time he could leave them more to themselves and take other six, and so on, and in that way he would quickly build an industry. I would not advocate more than six raw recruits at a time.

Q. 38. Do you think the work done would nearly pay the salary of the teacher? Perhaps not the first year. Growing the Osiers, and having help from the apprentices in their cultivation with the work, they would little by little produce, should make an industry self supporting after a fair start was made.

Q. 40. At any rate the loss would be very small? I should think there would be a balance on the right side in due time.

Q. 41. What experience have you had in the planting and growing of Osiers? I brought to South Africa only an elementary knowledge, but I have now added two years Colonial experience which would enable me to undertake any cultivation in South Africa with confidence.

Q. 42. Have you any knowledge of suitable soils and conditions? Would you be capable of advising as to the class of soil and position of any farms where Osiers could be planted? I think if I was on a farm I could give an opinion that would be safe enough to work upon.

Q. 43. There are so many different soils and conditions out here? We have planted in Lovedale in several different places, and seem to have had nothing but success. Almost any soil will grow Osiers, if sufficiently moist and deep.

(Shows rough sketch of plantation at Lovedale).

Q. 44. How much ground would you want for planting the Osiers? I have cut as many as 150 rods off one set, and 19,000 cuttings may be planted to an acre; you do not want a large area.

Q. 45. Is it your experience—of course we know here our country is upside down from any other country. The water is mostly found near the top of the hills. The sides of the hills are usually the most moist place. The water percolates from the top to the bottom? Lovedale is situated on the side of a hill. The Osier plantation is down in the hollow not far from the hill. The plants get the moisture that percolates from the hill down to the river.

Q. 46. Do they require any depth of soil? I would not attempt to plant in less than three feet of soil. I advise always twelve inches of the set being below the soil. At Lovedale we plant up till November. The season there is much the same as here.

Mr. C. J. Ingle—[BASKET-MAKING.]

Colonel Maclaughlin exhibited a large variety of Basuto work made from Mountain Grasses and Rushes, and many of the Grasses and Rushes Mr. Ingle thought could be put to commercial use in the industry of basket-making.

Q. 47. It would be easy to teach natives who have done such work as that? I should say it would be a great foundation.

Q. 48. Is there anything else of interest that you can communicate, Mr. Ingle? Might I ask a few questions? Have you anything in view in the way of encouraging basket-making in the Colony? Oh yes. Do you anticipate in any way starting an industry? Chairman: The idea is to work the industries on a major and minor scale. What I call a major scale are those industries which could only be worked by large factories, for which capital would be required. Those the Government intends leaving entirely to private enterprise. They would support these by granting bonuses. Basket-making would be one of the minor industries which we wish to encourage as cottage industries, so that the farmers and those living in the countr who are not employed during the whole year, and especially now that they have not large flocks as before and have plenty of time on their hands, might do something else to add to their subsistence. I think this Commission might be prepared to recommend to the Government the appointment of an expert to go about teaching the people at places where we could collect a number of people. Mr. Ingle:—That is very much the plan on which the basket-making industry was started at home by a few folks interested in the peasantry of Sussex. A teacher was appointed to teach the villagers, and under the County Council taught the children attending the Village School. When the cottagers became competent they were served out with material for which they were charged, and made work at home, that the Industry took the sale of. I should think that a teacher who could spend most of his working time in the workshop with a few apprentices would be able to build up a more staple industry than by merely depending on the villagers. I would advocate securing a man who could undertake the work, to begin with say with six apprentices; he could add to this staff periodically say until he had 24 in the workshop. I think a good man could manage 24 European boys and get some good results.

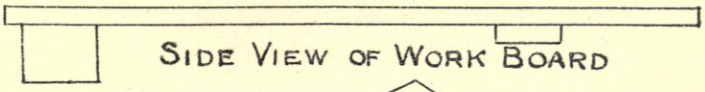
Q. 49. These boys would then be capable of employing further labour when they had finished their apprenticeship? Yes. That would be the question, what opening there would be for boys when they were out of their time, unless they could start business themselves. I should think they would be capable of teaching.

Q. 50. These people would have to be supplied with designs, or could they make shapes for themselves? Apart from anything they had been taught they would no doubt need designs.

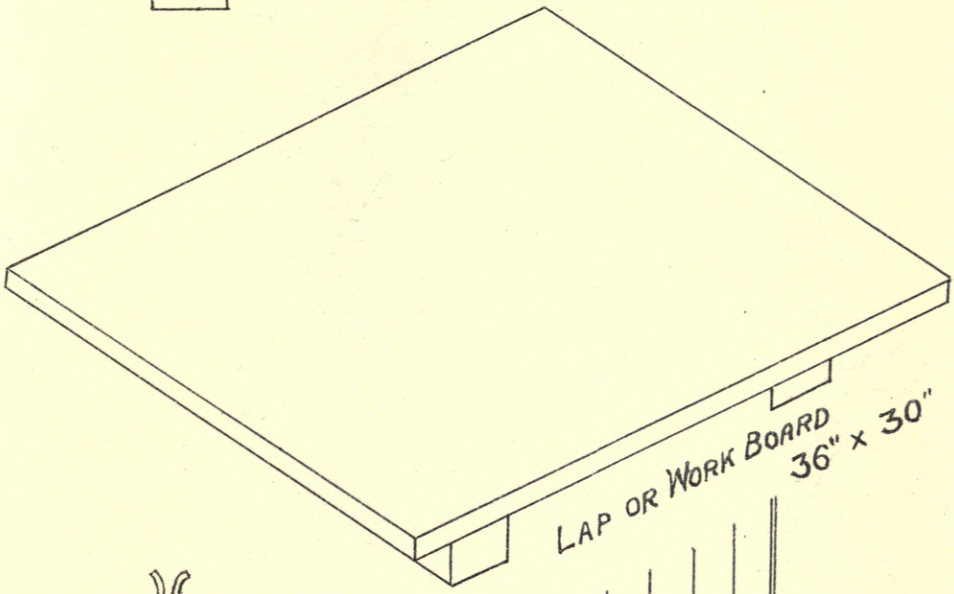
Q. 51. A man with two years' apprenticeship could copy almost anything? I would not like to say that. I would not say a youth would produce a chair that would satisfy a master in two years.

Q. 52. What is the length of the apprenticeship. Nothing less than three years. We do not like to take a boy in London under five. Very often

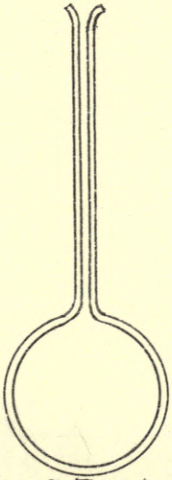
Workshop Plant, for Basket Making



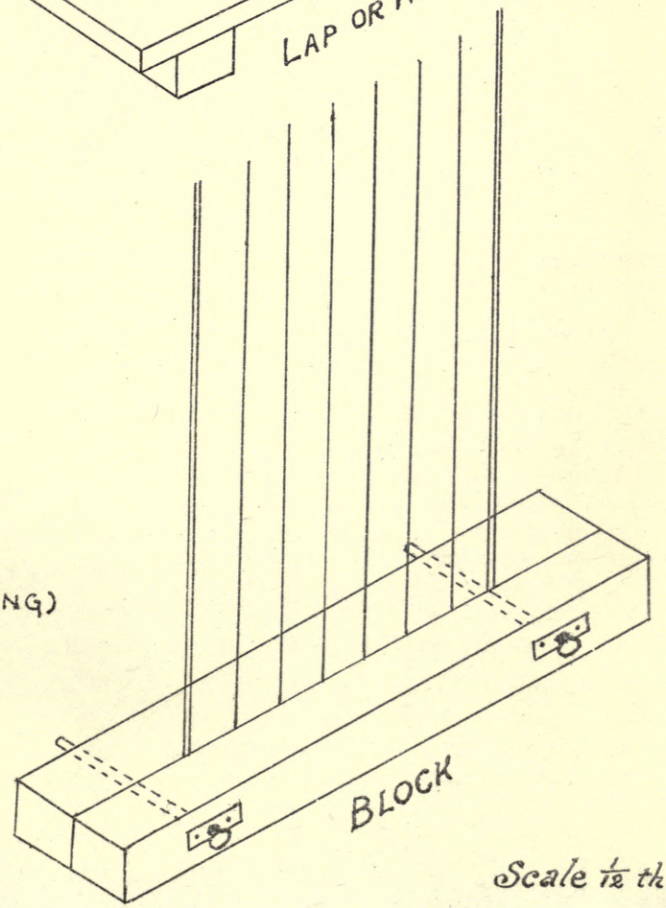
Side View of Work Board



Lap or Work Board
36" x 30"

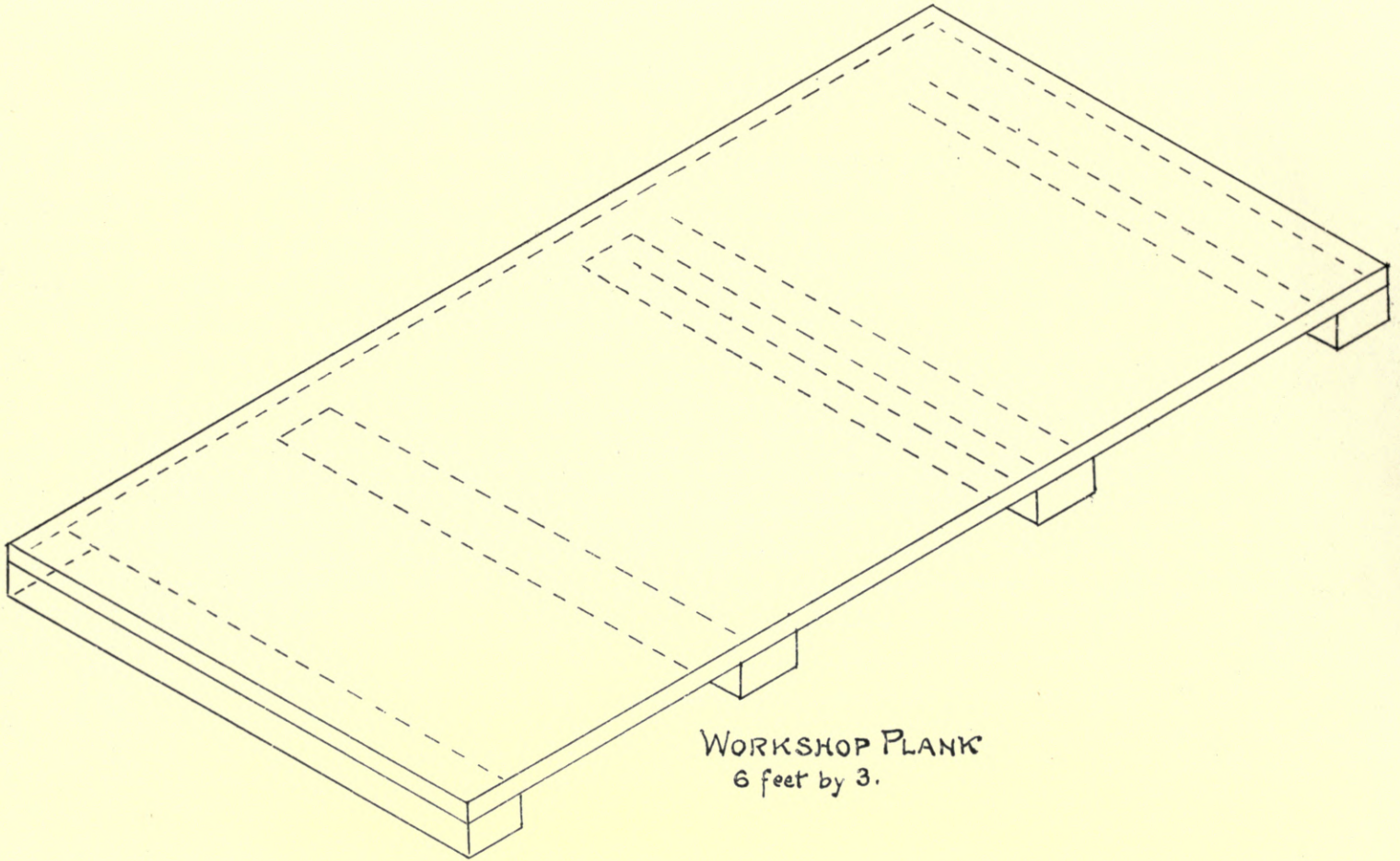


Steel Brake
(for Rod Peeling)



Block

Scale 1/12 th.



WORKSHOP PLANK
6 feet by 3.

a workman brings his own son into the workshop and the employer takes no responsibility. The father teaches and pays his boy. After two or three years the boy begins to get very useful. The first year he can do much in parts. That is the idea of the home work. The father and mother will undertake the more intricate parts. In France you will find children of six and seven years of age putting in their part of the work quite well. I should say a small country industry ought to be able to produce a basket as serviceable as that for 15s. to 18s. a dozen (cost price 7d. each; selling price, 2s. 3d. each). A small rough marketing basket could be produced for a matter of 12s. to 15s. per dozen, that is the thing you have a sale for.

I might say I feel sure Lovedale could supply you with cuttings if you were desirous of using any from the crop we have now standing. The price, I could not quite say, I should think we could be able to cut them and pack them at about 3s. 6d. per 100 sets; that is a rough estimate.

It was arranged that Mr. Ingle should consult with his Board at Lovedale and arrange to send as many of the Osier plants as could conveniently be sold, and Mr. Ingle agreed to give every assistance in his power should this be desired by the Commission.

EVIDENCE OF MISS WILSON on Lace Making.—8th March, 1904.

In the absence of Mr. Meiring, Colonel Mclaughlin took the chair, and explained to Miss Wilson the objects of the Commission.

Miss Wilson exhibited specimens of work done by Dutch girls at the Technical classes in conjunction with the Normal School, including Bruges, Torchon, Limerick, Carrickmacross, Russian and Italian Laces, some of which were very simple and easily learned, others again much more elaborate and intricate. Miss Wilson explained that the girls were very fond of the work, some of them showing great aptitude in learning. Miss Wilson was asked how long the work took to accomplish, and stated for example that a lady of her acquaintance had made a Collar in Bruges Lace in three weeks, worked on board ship, and that the value of that Collar when finished might be £3. She explained that the material required for this work was very cheap, only a matter of a few pence. Miss Wilson stated that at the classes they had only spent for material £7 in six months, and that during that time many beautiful pieces of work had been turned out.

Miss Wilson was of opinion that Lace-making would be a very suitable home industry to take up, and explained that recently they had sent out from the Normal School several girls who were each now teaching others, and suggested the Relief Camp at Parys for a start. She explained that at present there were some of the girls who could act as teachers of the work, and that therefore it would be unnecessary to send home for teachers. She explained that at present the Lace-making classes only met for a few hours per week, but was of opinion that if a workroom were started where the girls could collect and work regularly every day under the tuition of experienced teachers, the industry might be very successful. Miss Wilson stated that at the Normal School they had now two paid teachers of Lace-making; that they were about to start new centres at Harrismith and Bethlehem, and that in time several of the girls at the Normal would be quite able to act as Teachers.

Conversation took place as to the industry of Lace-making in Ireland, Bruges and Devonshire, in all of which places the industry had only begun on a very small scale.

Miss Wilson explained that the only outlay the Government would have would be the salary of teachers, which was about £150 per annum, and it was suggested that recommendation might be made to the Government to appoint some Teachers for a few years. Miss Wilson was of opinion that if this were done, the Dutch girls would apply themselves to the work, and that by the sale of their work they would be able to make, perhaps not a livelihood, but at any rate, a sum which would very materially diminish the present relief fund.

Miss Wilson was asked how long she had taken to learn the work, and stated that after four hours' practice she mastered the simple stitches for pillow lace. In three months most classes can turn out good work. Some girls learn very quickly.

Miss Wilson stated that there was always a demand for the kind of work shewn, and that at a recent Exhibition of the Normal School work, several offers had been made for the same pieces of work.

Miss Wilson stated that during the time of the Refugee Camps, knitting had been taught, the women making fishermen's jerseys, sweaters, etc., and was of opinion that if some of the older women could be employed in this way, the articles could be sold to the country people. In was stated that at present there were at Thaba 'Nchu several families who would be ready to undertake this sort of work.

Miss Wilson stated that she had paid 2s. 6d. a lb. for the wool used for this work, getting it from home; that she had tried to get the same wool at Cape Town, but the price there was 7s. 6d. a lb.

Miss Wilson was of opinion that up to the present the Dutch women had not been taught to knit, as at the Camp she had had 100 children out of whom only about eight could put wool and needles together. They were very easy to teach however.

The Chairman thanked Miss Wilson for her kind attendance.

APPENDIX XXVI.

Office of the Superintendent,
Tokai Porter Reformatory,
Retreat, 14th March, 1904.

BASKET-MAKING INDUSTRY.

Sir,

In reply to your letter of the 11th instant, I beg to inform you that a number of Juvenile Offenders, detained at this Institution, are employed under two Basketmaker Instructors got out from England for the purpose, in the manufacture of all classes of basketware. Ratan, imported direct from China at a cost of £11 17s. 8½d. per 1,000 lbs., through the agency of Messrs. J. G. Steytler and Co., of Strand Street, Cape Town, on a commission of 5 per cent. is mostly used, and we also grow a very large quantity of Osiers on the Estate, but these have not done well. We are now arranging for the importation of Osiers from Madeira, where, as you know, Osiers are largely used for working up into chairs and sofas, etc. Our Forest Department has put down Osier beds at the Kluitjes Kraal Forest Plantations, and we have, so far, purchased all the cuttings, but I do not think the undertaking has proved remunerative. I am not in a position to supply you with any other particulars in regard to Osiers, but would suggest that you should apply to the Conservator of Forests, Parliament Street, Cape Town.

Before starting Basket-making, as an industry, I would suggest that you first find out what the demand is likely to be, for it occurs to me that yours is not a Colony where there will be a sufficient demand for basket-ware to justify expenditure in establishing an industry. One advantage about basket-making is that it requires no outlay on tools; all that is required besides a suitable building is a few old razors to split the Rattan and Osiers, a large

tank for soaking the Rattan and Osiers and an Instructor, so that the initial outlay need only be very small. Everything depends upon the demand, and then of course it takes time to work up a trade; our sales for the last nine years have been:—

1895	21	3	4
1896	196	11	0
1897	325	14	0
1898	494	4	3
1899	490	5	1
1900	1174	2	7
1901	1186	12	11
1902	1780	12	4
1903	1430	9	2

Owing to the increasing use of boxes in place of baskets, for the transport of fruit, and also by Breweries and others, we have of late had to look round for orders to keep our shops fully employed and have only just written trying to secure orders for washclothes baskets from the Military of your Colony.

I have the honour to be,

Sir,

Your Obedient Servant,

(Signed) H. ORPEN,

Superintendent.

APPENDIX XXVII.

CULTIVATION OF OSIERS.

Osiers are grown in enclosed plantations, which are generally known as Holts. The produce is known commercially as Rods. Green rods are fresh cut and peeled. Brown rods are those which have been left to dry in their skins. White rods are those which have had the bark removed or peeled. Buff rods are produced by boiling brown rods and then paring them, but the colour thus produced is imitated by dyeing.

Osiers are chiefly grown along water courses and land which is subject to flooding. A variety of circumstance contribute to this situation being selected. It is not merely that the soil is suitable, but the convenence of having close at hand Water Carriage for a bulky and heavy crop which must be for the most part removed in a green state has no doubt tended to restrict the growth of Osiers almost entirely to the neighbourhood of Rivers. An additional reason for the selection of such sites is that the winter floods bring down from the uplands a considerable quantity of soil which acts as a fertilizer. Floods are occasionally the cause of considerable injury to the Osier beds.

The most suitable soil for the growth of Osiers is a deep rich moist alluvial soil, and good clay may be counted if sufficiently moist. Peat, moor and hot gravels are absolutely unsuitable and they will not thrive in stagnant water. The site of an Osier bed having been selected, the land must be thoroughly cleaned before planting, and stirred to a depth of 14 or 16 inches. Planting should be done in Spring; the sets are cut from wood of two years growth. They

should be 16 or 18 inches long, and about 10 inches should be in the ground. The spaces between the rows must be kept clean, but care must be taken or the Osiers will be injured.

Under the most favourable circumstances the newly planted bed will be at maturity after a period of three years, but as a rule four or five years must elapse before its full development.

A bed properly planted, kept clean, well filled up and well managed will last from 10 to 15 years.

A certain proportion of coarse growing Osiers may be grown, as basket makers require some strong stout rods for uprights. The Osiers attain to their full growth in the Autumn. They will make an average growth of 8 or 9 feet in a season.

Cutting the rods commences with the new year, at any rate before the sap rises. The rods are cut with a sharp hook somewhat like a reaping hook, a clean cut without splitting the rod is essentially necessary. As the rods are cut they are tied up by willow bends into bundles. Each bundle has a girth of 45 inches at a distance of one foot from the butt. An average crop will reach to 250 bundles. A green bundle will weight six stones.

When the rods are to be peeled they are conveyed to the peeling yard and placed with their butts in water where they remain until the rise of sap makes the peel separate easily from the stick. Sometimes after the rods are cut they will dry from exposure to the air, and in that case they are put in a heap, watered, covered up and sweated. If the rods in the pits get too advanced in growth before peeling the difficulty of peeling is increased, and the rods are damaged. The work of peeling begins as soon as any of the rods are fit. It is done by women who draw the rods through a cleave. This divides the rods into strips which are removed by hand. The children of the peelers assist in this latter operation.

As the rods are peeled they are sorted into three grades, large, medium and small, according to their size and length. They are then exposed to the air for a short time on racks or reared against hedges and walls. When dry they are tied up in bunches of the same dimensions as before and stored away in the sheds.

Rods which are adapted for the purpose, and which are in consequence most valuable, are subjected to another process known as skeining. This is a longitudinal division of the rod by splitting it into equal parts. The thick end of the rod is nicked with a knife, dividing the circle into three sections. A triple wedge is then inserted and the rod is drawn rapidly through the hand. The split rods are then drawn upwards under a knife fixed to a gauge to remove the water ring and inner angle, and the rod is reduced to a flat thin strip of equal thickness.

These skeins are used for weaving sieves and riddle bottoms and for making basket handles and similar articles.

Green rods are skeined by the same process for making hives, etc.

The ordinary practice of most growers is to sell the rods when cut to persons who peel, sort and store them.

APPENDIX XXVIII.

Education Department,

Government Offices,

Bloemfontein, O.R.C., 26th April, 1902.

W. A. Russell, Esq.,

Assistant Director of Education,

Bloemfontein.

THE TEACHING OF SPINNING AND WEAVING IN THE REFUGEE CAMPS.

Home spun cloths involve the various processes of teasing the wool, carding and spinning, weaving and dyeing. The wool is first washed, then teased, i.e. the fibres are roughly picked apart by the fingers, to prepare them for carding. The wool is then carded, i.e., the fibres are thoroughly separated by drawing the wool between two machines studded with wire teeth. A little oil is applied during the operation, and the wool is converted into small rolls, after which it is ready for spinning. The spinning is performed by a small machine worked by the foot, a fresh roll being added to the last as it is spun out. The thread is then ready to be woven, but for certain purposes two, or even three threads are twisted together to form a stronger yarn—a simple process requiring little technical skill. For weaving purposes a hand loom is used. The cloth is then dyed with some natural dye, if it is meant to be all of the same colour, but if cloth of a certain design or pattern is required the thread has to be dyed in the various quantities required, and this involves unwinding the coils of thread for dyeing purposes, but the process takes more time than skill.

Such is a very rough and general description of the processes to be gone through in the making of home spun.

In the Scotch home industry the wool is grown by the crofters or small farmers, and their wives and daughters see to the preparation of the cloth. The women used to carry out all the processes without the use of anything but hand machinery up to the spinning stage, and the weaver wove the cloth with the hand loom. To save time and trouble it is now genrally the rule to send the wool to a carding mill to get carded, the women simply doing the spinning, and the weaver the weaving, but women can be found who do the carding themselves with a couple of hand carders—pieces of wood, something like tennis rackets, but containing numerous wire teeth between which they draw the wool. In a sparsely populated district like the Orange River Colony, where it would probably involve more time and trouble to reach a carding mill, even if it existed, than to carry out the work, it would, I think be advisable to train the women in all the processes. The teasing is quite simple, the carding also is simple and requires only two small hand carders for machinery, the backs of these being used to get the wool into rolls; then comes the spinning, which requires the Spinning Wheel, and there is also needed a knowledge of some simple dyeing operations. All these processes can be performed by the women, the machinery required costing less than £5, which includes a small machine for converting the threads into "hanks" or "cuts."

In Scotland the weaving is done almost without exception by men, and looms would be required for their training.

In view of the circumstances of the country, and the time at the disposal of tenants of widely separated farms I would suggest that the instructors sent to the Camps should be able to teach, and should teach the women all the processes required to convert the wool into thread—the teasing, carding, spinning, the winding and unwinding of the yarn, and dyeing. For this purpose they would require in the way of machinery hand carders, spinning wheels, and winders, besides, of course, dyes, etc.

The weaving would probably be taken up by the men, and an instructor would require to bring out a few hand looms along with him. These machines are not costly. I think it would be advisable to get four women spinners, each of whom could supervise say six spinning wheels at work. Two might teach at one Camp, and two at another, and they would thus be able to do a considerable amount of work within a year. At the same time two weavers with their looms might be performing their part, one accompanying the two spinning teachers. I am not quite sure of the cost of hand looms, but assuming each weaver superintends two machines, I think £150 would cover the cost of looms and spinning apparatus.

There is a Scottish Home Industries Association, of which the Duchess of Sutherland is the most prominent member. Her Grace is a most practical, patriotic, and energetic lady, and I am sure she would render every possible assistance in the procuring of the necessary teachers and materials. If Miss Wilson wishes it, I shall have much pleasure in writing to Her Grace, and as I am known in many of the districts where these industries are flourishing, my name might be used to guarantee the teachers a kind welcome from the inhabitants of the Camps, and every attention and consideration on the part of the authorities.

(Signed) HUGH GUNN,
Organising Inspector of Schools.

P.S.—I may mention that Andrew Mackay, Pittentraill, Rogart, Sutherland, Scotland, is a well-known maker of spinning wheels, and the same parish, Rogart, might possibly supply some of the teachers required. The Duchess of Sutherland knows the locality and the people.

APPENDIX XXIX.

LETTER FROM MR. V. HUSSEY WALSH T OMR. W. A. RUSSELL ON SPINNING AND WEAVING AS HOME INDUSTRIES.

81, Onslow Gardens, S.W.,
May 6th, 1902.

Dear Sir,

As it is now five years since I have made the tour of the Irish Industries, and visited the spinners and weavers in their own cottages, I am forwarding your letter to Mr. Horace Plunkett the Vice-Chairman of the Irish Department of Agriculture and of Technical Instruction who will be able to give you far better information than I can. The two chief centres of homespun weaving are to be found between Ardara and Carrick in West Donegal and in the neighbourhood of Castlebar. The former industry was organised eight years

ago by the Congested District Board. A Galashiels weaver of the name of McNiven was brought from Scotland, and he went from cottage to cottage teaching the spinners and winners how to utilise the latest appliances which were bought by the C.D.B., and resold to the people on the instalment system. Inspectors were appointed both at Ardara and Carrick, who examined the cloth as it was brought in, gave bounties to those who produced good material, and rejected the webs that were either dirty, shadowed, streaky, or of uneven width. The webs which the Inspector passed were then stamped with the mark of the Irish Industries Association, which enabled them to secure a higher price in the market than the others.

I am sorry to say I cannot tell you where the plant is purchased now, but Mr. Plunkett will be able to do so. As you are probably aware, it is very simple.

The Donegal peasant shears his own sheep. The wool is then washed and dyed by the members of his own household. The dyes are almost entirely of local growth; crotal, a lichen found on the rocks, yields a red brown hue, heather gives a yellow, and peat a red brown dye, while indigo and madder can also be secured from local products. The wool is then carded by flat pieces of wood furnished with metal teeth. When once the wool has been spun into yarn it is handed over to the weaver, who is usually not the owner of the cloth, but merely an artisan working for hire.

The workers can earn as much as 18s. a week, a very large sum when the wages of the labourer are often as low as 6s. a week. The revival of the industry put a stop upon emigration.

To deal with another subject, I think you will find crotchet making more profitable than lace-making. I have generally found that the Irish crotchet maker can make up to 18s. a week, and in exceptional cases, as much as 26s. a week, whilst the makers of Irish point, rose point, guipure or applique rarely get more than 12s. to 14s. a week. The run and tambour (Limerick) lace workers make a little more.

I hope I have not given you too much useless information, but I think the more practical details will be given you by Mr. Plunkett.

Believe me,

Faithfully yours,

(Signed) V. HUSSEY WALSH.

W. A. Russell, Esq.,

Education Department,

Bloemfontein.

GENERAL APPENDIX.

APPENDIX XXX.

NOTES ON VARIOUS INDUSTRIES.—April 18th, 1904.

MAIZENA.

Maizena or Starch can be made from both Mealies and Potatoes.

The usual process for making Starch from Mealies (as used in America) is to crush the grain, then mix it with water in a large tub called a mash tun, made on the same principle as those used by brewers.

The mixture is thoroughly stirred up, and then allowed to stand for some time, and then again agitated, and the starch water drawn off into a series of settling tanks where the starch deposits itself, allowing the water to pass off quite clear. When properly settled the water left in the tanks is drawn off and the starch will be found in a solid mass, which is dried, crushed and packed as Maizena, or laundry starch, as the case may be.

Potatoe Starch is simpler to manufacture as it is made by pulping the potatoe in a simple machine, at the same time allowing a small stream of water to trickle over the mass, and is collected in the same way as the mealie or corn starch.

Mealies are also used in America to make sugar. The stalks are crushed in a small mill, and the juice obtained is boiled down, and by a special process, converted into sugar.

The Kaffir Imphee or "Sweet Reed" is also used for sugar making. The seeds of this plant were taken from Natal in 1857 to Illinois, and some time after the Chinese Sorghum also found its way to the same place, and by a process of hybridisation, new varieties were produced, resulting in the "Minnesota," or early Amber Sorghum, now used in America for producing large quantities of the best sugar.

N.B.—Sorghum yields in America 200 gallons of syrup to the acre, each gallon of syrup giving 10lb. of sugar. Mealie stalks eight lbs. of sugar per gallon.

From the husks of the mealie cob beautiful hats are made by some young ladies living in Lower Albany. These hats are sold locally, and are also sent to Kimberley for sale there. This is an industry that ought to be cultivated and developed, as the material is very cheap, beautiful when made up, and takes well with the public.

Broom.—Broom can be easily made here quite equal to the American article, by using the Broom Corn. I have seen it growing to perfection in the Kat River district near the Katberg. It will grow in the same soil and under the same conditions as Kaffir Corn, which it very much resembles.

Jams.—Jam can be made to perfection with proper appliances, viz., steam jacketed pans, for boiling the fruit, as any degree of heat can be obtained by steam, and gauged to a nicety, also costing much less and making a superior article.

Sweets.—Sweets can be made in the same factory, and using the same steam as the jams, and do not require very expensive machinery.

Pearl Barley.—Pearl Barley can be made cheaply, as the machines used are very simple, and the power required not great. I have seen it made near Fort Beaufort at Mr. Ainslie's Mill, and the quality was quite up to the mark.

Bones.—Bones can be utilized in several ways. Placed under high pressure steam the gelatine or glue is first extracted. This gelatine contains a large amount of fat, which acoumulates on the top of the mass when cold, and which can easily be taken off and be profitably used for making soap, etc. The bones are then used for manure, as they contain 17 per cent. of phosphorus, and are a very valuable fertilizer. I need hardly say that the bones can be easily crushed in a bone mill, or boiled in a mixture of lime and ash, which will completely dissolve them. This is a most profitable industry.

Cement.—Cement is easily manufactured if the correct materials can be obtained, viz., clay and lime. It is quite possible that the lime (which is abundant in this Colony) in the form of "Septaria," or small nodules of limestone,, which are found in the clayey deposits in our spruits, may be found of the right quality for making cement. It would be necessary to test the various substances carefully in a small way, so as to arrive at a definite and satisfactory conclusion.

Given the proper materials, the manufacture is simple. First the material, i.e., the lime, must be calcined, then mixed in a pug mill with hot water and clay in the proportions of three parts of lime and one part clay, then dried, and the whole again burnt. Ground by common French Burn millstones into an inpalpable powder, when it is ready for use.

Wool.—Wool can be converted into various articles at a small expense by using knitting machines made for hand power, costing only a few pounds. Of course the wool will have to be spun into proper yarn first, which would also require a Spinning Machine, but I do not think that it would be very expensive, and one spinning machine would supply enough material to keep a good many knitting machines going.

Socks, stockings, all kinds of hose, as well as under vests, pants, etc., could be made of first-class quality by the beautiful and efficient little machines now made.

Furniture.—Furniture can be profitably made in a simple style, by hand, which would not need a very elaborate training. A Turning Lathe, a Circular Saw, and a few other necessary tools, the use of which could soon be taught to those with mechanical tastes. The necessary woods are cheaply imported, and in any variety, if Colonial woods could not readily be obtained in sufficient quantity.

Factory.—One or two Factories might be put up arranged in different apartments to suit the different branches chosen, and driven by one Engine or water motor as the case might be. Water is, of course, the best and cheapest power, where a suitable situation is obtainable, but steam power is also very good, and in many places would be necessary.

Canned Goods.—Fruit canned would no doubt pay well, as the process is less expensive than jam making, in fact is so simple that native women have done it very well indeed.

Vegetables would also pay to can, as they are largely used, not only by hotel keepers, but by private families as well.

Pickles.—Pickles can be profitably made in a first-class manner with ordinary care. In making this kind of goods it is always best to make the Vinegar especially for them, as you can then be sure of its quality, which must be double the ordinary strength in the first part of the process, penetrating through and through the vegetables, and making them crisp and tender, and then bottling them in vinegar of the usual strength, thus making a first-class article. This I have proved, as it has stood the test of years and has been thoroughly tried by good judges.

Chutney.—Chutney can also be made here second to none. From fruit and also from Tomatoes, which are generally classed with vegetables, although they are the real fruit of a shrub. However, they make a splendid chutney, which I have used in my own house for many years, and I do not think this condiment could easily be beaten. It would pay to grow tomatoes for the express purpose of making this chutney, as they are easily cultivated and yield plenty of fruit.

Matches.—Matches, or the manufacture of matches, is another industry that would give work to a good many hands. Of course, it pays much better to employ Automatic Machines in the place of hand labour in all kinds of work, as I have myself patented a machine for filling match splints into frames, and at the same time dipping the splints into the compo for the heads. This machine, with two attendants, will do the work of about thirty hands, thus saving labour and cheapening the product.

I have tried this industry, and found that the profits are exceedingly small, if all hand labour is employed. I constructed a machine in 1886 to cut the splints and also the boxes out of wood. This machine, when attached to my steam engine, cut at the rate of 5,000 splints per minute, taking about ¼ H.P. to run it. The expense comes in when you have to dip the splints, box them, and also putting the boxes together. I did not make more than about 300 gross, although a firm in Grahamstown ordered from me as soon as they saw and tested the matches. An article was written in the "Kaffrarian Watchman" in Kingwilliamstown, by the Editor of that paper, who got one of the boxes into his possession.

I found the expenses were too large to suit me so did not carry on the business past the experimental stage. It is, however, a good industry where there is sufficient capital to work it properly. It is best to import the splints and boxes ready cut so as to avoid the outlay for machinery.

D. T. SMAILES.

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